THE *Soybean Digest*

REG. U. S. PAT. OFF.

GEO. M. STRAYER, Editor KENT PELLETT, Managing Editor

Publishers' Representatives: Ewing Hutchison Co., Chicago

Vol. 6 FEBRUARY ☆ 1946 No. 4

Published on the 15th of each month at Hudson, Iowa, by the American Soybean Association. Entered as second class matter November 20, 1940, at the postoffice at Hudson, Iowa, under the Act of March 3, 1879. Forms close on 1st of month. Subscription price to association members, $1.50 per year; to non-members, $2.00 per year; Canada, $2.50; other foreign, $3.00.

IN THIS ISSUE

Should Not Delay in Setting Price Feed supplies in the United States are short as compared with livestock population. Quality of current feed supplies in many areas is lower than normal, requiring greater quantities for the same livestock gains. Food is in the center of the picture.

The pressure of demand is dictating greater acreages of corn, oats and other feed crops. Markets and prices for them are assured. Still there is no announcement forthcoming on 1946 soybean support prices.

Recognizing current pressure for acreage, officers of the American Soybean Association in early February contacted federal officials in charge of price and acreage programs, strongly urging immediate announcement of a support price of $2.04 per bushel on 1946 crop soybeans. It was felt that each day's delay in announcement meant reduced bean acreage, and that support price of anything less than $2.04 would mean still further reductions.

At this writing no action has come out of the nation's capital, but an announcement is expected momentarily.

Penalty for Forgetting the Producer During the war years shortages have become so commonplace that they fail to disturb many people. Americans have learned to stand in line, and to wait their turn.

There is a crisis in the feed industry at the moment. Protein has disappeared. There should be as much available as a year ago, even though it would not be adequate to fill all poultry and livestock needs. Principal trouble seems to be that the OPA ceilings on protein meals are far below actual values, encouraging the establishment of a barter system in the feed industry. Protein meals are being passed out from under the counter, unavailable to the regular buyer who will not trade or barter for his supplies. Soybean oil meal, and all protein meals, are the most underpriced of all agricultural commodities under the present OPA ceilings.

Contributing factor is the increased concentration of processing facilities and feed-mixing facilities into the hands of a few. Less and less meal is finding its way into the open market.

The recent protein order issued out of Washington will help. It will steer more protein through normal channels. It will protect the small feed mixer and buyer from strangulation.

But it does not get at the root of the trouble. It does not make more soybean oil meal available—it merely changes the route by which it will come to the feeder. Governmental controls have created the maldistribution by sidetracking the law of supply and demand. Prices of soybeans and meal have not been allowed to find their own levels, but rather have been under federal control. Barter has become a temporary necessity, and coercion has run rampant.

Soybean growers have a stake in the present situation. It is the product of their labors which is being bartered

(Continued on page 34)

A. S. A. Supports Domestic Fats Bill

It has been announced by the National Association of Margarine Manufacturers that the American Soybean Association, nation-wide organization representing soybean growers, will support legislation designed to remove all Federal restrictions on the production and sale of margarine.

In a statement made by the Soybean Association's secretary, George M. Strayer of Hudson, Iowa, however, the soybean growers announced they would give their full support to pending legislation only if it is amended to require that American margarine be manufactured from fats and oils produced from oil-bearing crops or from animals grown within the continental United States.

The National Association of Margarine Manufacturers in a resolution at its annual meeting, January 24th, in Chicago endorsed the position taken by the American Soybean Association, according to Paul T. Truitt, president of the margarine group. "For several years now," he said, "all margarine in this country has been made only from domestically produced fats and oils. Margarine manufacturers have learned how to make the highest quality margarine out of American oils, especially soybean and cottonseed oils. No foreign oils are used nor have they been for the past several years and the industry is prepared to offer American oil producers a continuing market for their product in the rapidly expanding margarine economy."

Strayer stated that the American Soybean Association would give vigorous support to the Rivers Bill, H.R. 579, now pending before the House Committee on Agriculture, as soon as it is amended to apply only to domestically-produced fats and oils.

The Rivers bill would repeal the existing 10 cents per pound federal tax on colored margarine and the tax of one-fourth cent per pound on uncolored margarine. In addition, it would eliminate existing license fees imposed by the federal government against manufacturers, wholesalers and retailers of margarine.

The effect of the bill, if it passes, will be to make colored, vitamin-A-fortified margarine generally available to the consumer at no increase in cost in the 24 states which now permit the sale of colored margarine. Housewives now pay an average of 23 cents a pound for uncolored margarine and must blend in the coloring at home because of present legislation. Manufacturers contend that they can add this coloring more efficiently during the manufacturing process, just as it is added to butter, and, as this would avoid the separate packaging of color packets, no increase in cost for this convenience would occur. This proposed precoloring of margarine will also save millions of pounds of fat annually now lost in the home coloring procedure.

No change is asked in the present labeling laws or the other protective legislation such as the Definition and Standard of Identity and the present packaging law.

The Rivers bill, however, does specify that the name of the product be changed legally from oleomargarine to margarine, the generally accepted term. According to the National Association of Margarine Manufacturers, "oleomargarine" is now a misnomer as most margarine is now made from vegetable oil whereas the prefix "oleo" refers to the oils of beef fat, originally used in the product.

Pointing out that soybean oil is of growing importance in the production of American margarine, the secretary of the American Soybean Association said in explanation of his group's announced stand on the Rivers bill, "American soybean producers are vitally interested in existing federal restrictions on margarine because of the rapidly increasing quantities of soybean oil being utilized in the manufacture of this product. In 1945 soybean oil constituted approximately 40 percent of all fats and oils used by the margarine industry."

GEO. M. STRAYER BACK AT HIS DESK

With this issue the *Soybean Digest* rejoices over the return of Editor Geo. M. Strayer to his desk after 2 years in the armed services.

He is also resuming his duties as secretary of the American Soybean Association. He was given a military leave of absence and his wife, Jeanne M. Strayer, was named secretary to carry on his work while he was in the army.

Technical Sergeant Strayer performed public relations work for the Kansas Recruiting District of the Army, with headquarters in Kansas City.

GEORGE M. STRAYER

LOWER PACKAGING COSTS...

BETTER PRODUCT PROTECTION—

another MULTIWALL success story

This case history relates the experience of several fertilizer manufacturers who are enthusiastic about St. Regis Valve Bag Packaging systems for three important reasons:

ECONOMY:

Increased Production:
Daily average 20% higher with St. Regis packer.

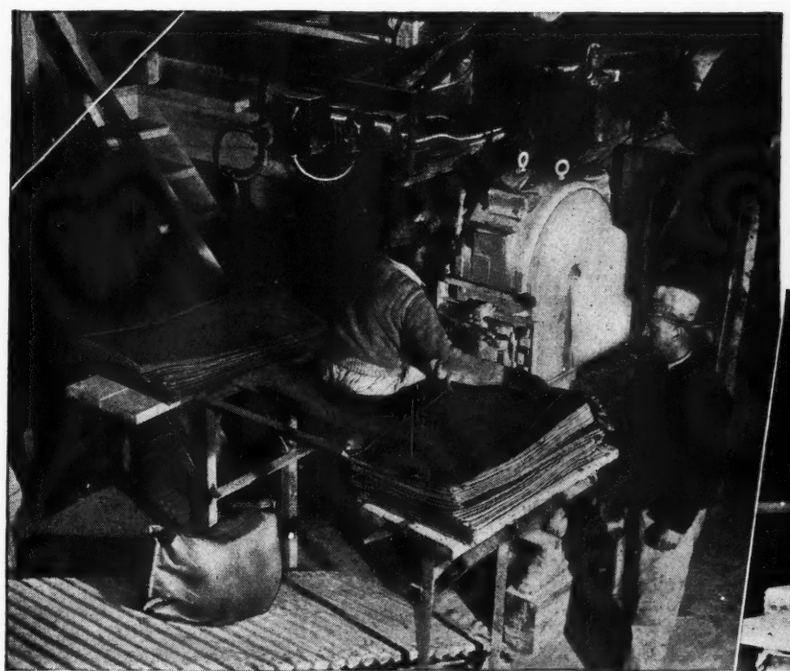
Reduced Labor Costs:
Packing operation with 5 men, instead of 8 men formerly required.

Reduced Container Costs:
Multiwalls approximately 50% of cost of burlap bags.

CORRECT WEIGHTS:
Eliminates customer complaints about siftage and retention losses.

BETTER PRODUCT PROTECTION:
Custom-built multiwalls protect products from damaging dampness.

Multiwalls are specially constructed to handle and protect fertilizer of various analyses.



(At left) This high-speed St. Regis Packer fills Multiwall Paper Valve Bags and weighs them simultaneously.

(Below) Illustrating the quick, easy handling of Multiwall Paper Bags.

St. Regis MULTIWALL PAPER BAGS

ST. REGIS PAPER COMPANY
TAGGART CORPORATION

NEW YORK 17: 230 Park Ave. CHICAGO 1: 230 No. Michigan Ave.
BALTIMORE 2: 2601 O'Sullivan Bldg. SAN FRANCISCO 4: 1 Montgomery St.

Mail this coupon for the complete story

Birmingham Boston Cleveland Dallas Denver
Detroit Franklin, Va. Los Angeles Nazareth, Pa.
New Orleans No. Kansas City, Mo. Seattle Toledo

IN CANADA: St. Regis Paper Co. (Can.) Ltd., Montreal, Vancouver.

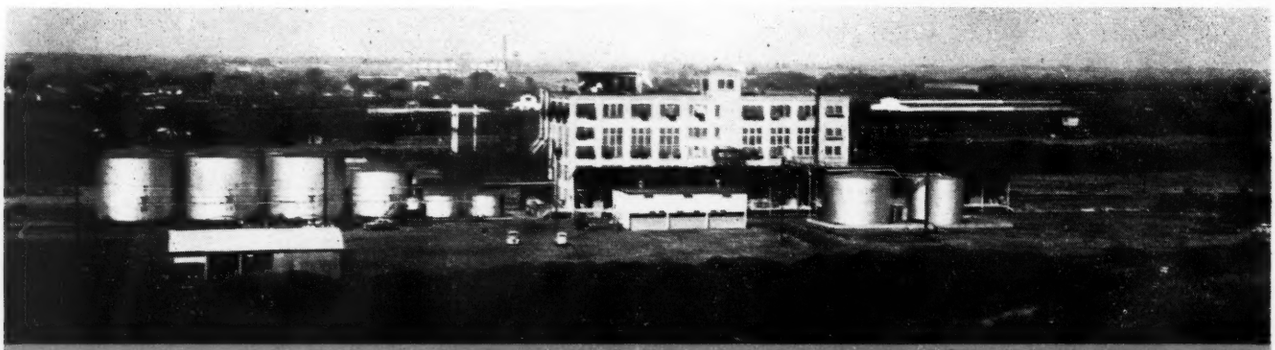
Without obligation, please send me full details regarding the "Case History" outlined above.

NAME_____

COMPANY_____

ADDRESS_____

Refining DOMESTIC SOYBEAN OIL *for Edible Use*



Oil refinery of A. E. Staley Mfg. Co., Decatur, Ill. Large tanks on either side of building are for storage. Photos are all from Staley plant at Decatur.

By M. M. DURKEE
A. E. Staley Company

DURING the last few years a golden flood of crude soybean oil has poured from the nation's mills. Expellers, solvent extraction plants and hydraulic presses have been producing this vitally important oil in quantities undreamed of two decades ago.

At that time there was considerable public skepticism about soybean oil. The country had been introduced to the product through imports from Manchuria. The quantity was of minor importance until the beginning of World War I, when importations increased rapidly, reaching a peak of 335 million pounds in 1918. This oil was processed by the old methods and equipment then used for treating cottonseed oil, and helped ease shortages of salad oil, cooking oil, and even "lard compound."

The quality of the refined Manchurian oil left much to be desired. The product was unstable, and had an unfamiliar odor and flavor, public memory of which placed a severe handicap on pioneer work with the domestic crop, which began in 1928. Much of the domestic oil refined during the early days of the industry had to be sold at a discount for non-food use.

Even then lack of flavor stability was mis-named "reversion." Actually by whatever process the oil was made, it never reverted to its original soybean flavor, but rather, in some instances, developed an undesirable taste quite similar to that in linseed and other oils in the paint oil class.

This tendency to acquire disagreeable flavors and odors is common to many oils. In general, the "drying" oils, those used in paint and varnish, acquire these tastes and odors much more rapidly and to a greater degree than do the edible, or "non-drying" oils.

Chemists distinguish between these two general types by means of the "iodine number." Iodine number is a measure of the proportionate weight of iodine which will combine chemically with a given weight of oil. An oil with an iodine number over 130 is considered a drying oil, while one below that level has possibilities in the food field. The test used most often is the Wijs method, details of which can be found in the *Handbook of Methods* of the American Oil Chemists' Society.

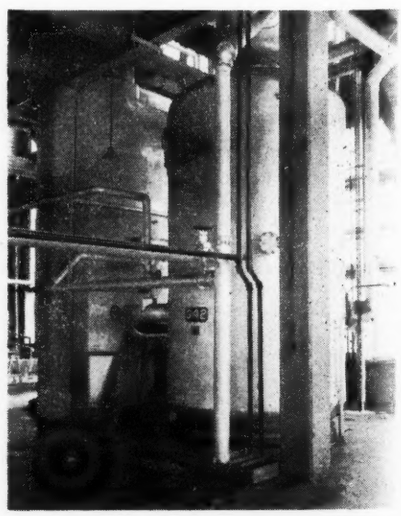
RELATIONSHIP TO OTHER OILS

Soybean oil is defined as a glyceride, that is, each molecule of oil contains one molecule of glycerine combined with three molecules of fatty acids. It has the same general structure as cottonseed, corn, and other vegetable oils. The differences in these oils are due to different proportions of the various fatty acids which are combined with the glycerine, and to the presence of different types of impurities, such as uncombined or "free" fatty acids, phosphorus-containing compounds, etc.

Mixed mill-run soybeans of the yellow varieties, taken from a wide area during an average season, yield an oil showing an iodine number of around 133, while the old Manchurian oil averaged two or three points higher. Domestic soybean oil can vary widely in iodine number, depending on the variety of beans crushed, as well as on climatic and soil conditions.

But iodine number does not tell the whole story; most oil chemists have felt that the

DEODORIZERS. As a final step in refining, soybean oil is steamed with pressure and temperature carefully controlled, in order to distill off the less desirable flavor and odor constituents.



● *Soybean oil has surmounted numerous obstacles to win wide acceptance as an edible oil by the general public. The author is a chemical engineer who has been connected with the refining of vegetable oils for over 30 years. He has been on the technical committee of the National Soybean Processors Association since its organization.*

flavor stability problem in adapting soybean oil as a food oil has been due to the presence of 6 to 7 percent of linolenic acid combined in the glyceride molecule. This fatty acid contains three unsaturated carbon-to-carbon linkages, and is abundant in linseed and other drying oils. It has also been felt that minute amounts of breakdown products are formed by this highly reactive and oxygen-hungry substance, which in turn have undesirable tastes.

Other chemists are of the opinion that minute traces of other substances are present, which are combined with very small amounts of aldehydes and ketones to give the undesirable tastes so apparent in the old Manchurian oil. Thanks to improvements in technology, domestic oil is much less troublesome. Research into these problems must continue, as a complete explanation has not yet been given.

QUALITY REQUIREMENTS IN OIL TRADING

No reliable standards existed for domestic crude in 1915, when the first domestic soybeans were crushed in a North Carolina mill, nor for many years afterward. In 1920, at Chicago Heights, Ill., hydraulic presses were again tried, but the experiment was short-lived.

By that time farmers were anxious to find a stable commercial outlet for their beans. In response to this demand, the A. E. Staley Manufacturing Co. announced that its new soybean plant would be ready for operation by the fall of '22. All available crops were purchased, but the supply at first was meager and the beans could be bought only in small lots. But Staley encouraged the farmers through an educational program, and hired an expert to help solve their problems. The supply of soybeans increased in both quantity and quality, and the plant had to be enlarged and rebuilt several times. The expeller method was eventually supplemented by the solvent extraction process. The new 2 million dollar Staley mill at Decatur, largest in the nation, employs the vastly improved hexane solvent method.

By 1930 the crushing of soybeans had reached a point where the industry felt the need for a trade association. Conscientious producers needed protection against the competition of those who were not too careful to make good crude oil, and the refiner demanded the assurance of quality standards to protect him against costly refining losses.

The National Soybean Processors' Association was formed and soon became well-developed and active. Trading rules are published annually similar in general structure to those formulated through many years of experience by the National Cottonseed Products Association.

At the time of the organization of the N. S. P. A., a technical committee was appointed from technologists employed by the member firms. This committee has done much cooperative work over the years, setting up quality standards as well as developing methods for making the necessary tests.

Since the emphasis in the early days of the crushing industry was on technical oils, the standards were based on the needs of that industry, but they were also fairly useful in predicting the quality of oil for refiners in the food industry. This group, however, prefers a system of trading based on an empirical laboratory refining loss test, as has long been the custom in crude cotton oil purchases.

To help in this, the refining test committee of the American Oil Chemists' Society has devoted the past 7 years to the problem of developing a useful laboratory refining loss method applicable to soybean oil. The one thus far considered official is quite workable with both expeller and hydraulic oils, but in the case of extracted oils, or water-washed crude oils, erratic results have been obtained. Owing to governmental objections to premiums for high quality crudes, trading by a refining loss test has been held in abeyance until price ceilings are removed.

M. M. DURKEE

EARLY DAYS OF DOMESTIC REFINING

One day in October, 1928, A. E. Staley, Sr., the great pioneer of the soybean industry, was discussing the small volume and apparently dismal future of the oil.

"Why," he asked, "can't this product be made into a good salad oil, like corn oil?"

It was a question that had been asked before, but had always received a reply such as, "Even if a good oil could be produced, the consumer public, with its long memory of Manchurian soybean oil, would automatically take a negative attitude toward it." During that period, most of the domestic oil had been made into a so-called varnish oil, to be used as a substitute for linseed; often it was combined with enough perilla oil to raise the iodine number and drying property to a point where it was comparable with linseed.

But Mr. Staley, whose vision carried soybean oil far beyond its then restricted use in paints and varnishes, had a positive answer to his own query. It was well worth trying. At his suggestion, equipment used for manufacturing corn salad oil—the only type available at the time, was employed for refining a batch of soybean oil.

The first experiment was not an unqualified success. The new oil was remarkably sweet and bland, but after an extended period of storage, instability of flavor became apparent. Yet a significant step in the right direction had been taken. Eighteen months of further experimentation and research finally improved the oil to a point where it could be placed on the market as a salad oil. Ultimately, real success came in getting acceptance of the oil in food channels, whereas it had been used solely in the industrial field before.

BUTTER COLOR SOYBEAN OIL

In 1929, by means of an unique refining process, a soybean oil was obtained which retained, after all impurities were removed, the natural color of the crude product. The color of margarine containing this oil was a good match to butter in eye appeal.

The margarine tax law at that time specified that "added-color" margarine was taxable at a rate of 10 cents per pound higher than uncolored spread. The manufacturer, using the specially-refined soybean oil, introduced the yellow margarine to the public without the extra tax—an obviously popular move among consumers.

Insufficient production of this oil led other manufacturers to the one remaining oil which has a natural carotene color—African palm oil. Its producers arranged for sterilization of the enzymes present in the fleshy part of the palm nut, immediately after picking, to prevent decomposition. Thus the

oil could be safely shipped to and refined in this country for margarine use.

This prompted the dairy industry to exert pressure which resulted in stiffer restrictions, and the extra 10 cent tax was made payable on margarine, even though its color was derived from the natural, wholesome pigment present in the soybean oil.

In recent years hydrogenated soybean oil has been gaining favor in the margarine industry, and in 1944 it represented 44 percent of all oil used in margarine production, according to U. S. Department of Commerce figures.

REFINING METHODS AND EQUIPMENT

Crude soybean oil contains nothing harmful, but requires careful refining to remove certain impurities before it may be used as a food. The major steps in the purification process are: (1) Neutralization; (2) washing (included in the neutralization); (3) bleaching; (4) winterization; (5) deodorization. Their function is to remove free fatty acids, phosphatides, mucilaginous substances, undesirable odor and flavor, and at the same time retain as much as possible of Nature's preservatives.

All other vegetable oils, with the exception of olive, and sometimes cold pressed sesame likewise require refining before they can be put to food use. Methods vary considerably among refiners in both details and equipment, and thus can be described only in a general way.

NEUTRALIZATION

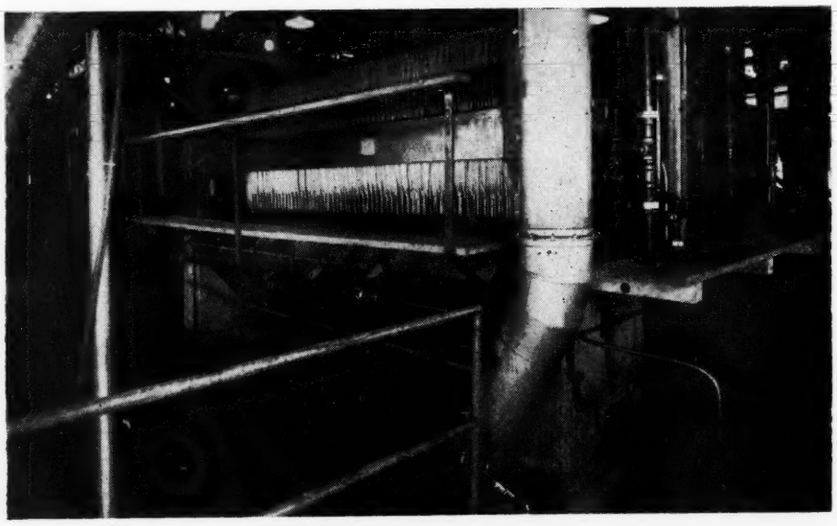
Up until 1933 or '34, the only method used in this step required use of so-called "refining kettles," large, cone-bottom tanks usually holding a tank-car or more of crude oil. They are equipped with heating coils, steam jackets, powerful variable-speed stirring paddles, sprays for adding refining chemicals, and overhead equipment to weigh in the treating agents.

The crude oil, at about 80°F. is stirred violently while caustic soda solution, main standby in this process, is added in slight excess over the amount which will form a soap with the free fatty acids and much of the impurities present. This soap stock is called a "break," which is slightly heavier than the oil. When temperature is increased, the break forms melted droplets, which settle and collect at the bottom when stirring stops.

The neutralized oil is allowed to settle quietly until the next day, then is drawn off from the bottom layer of the soapstock. All of the steps in this operation influence the refining loss. The kettle operator must be prepared to vary his procedure at an instant's notice, or a disastrous reversal in the emulsion may take place, forming a kettle of soap instead of clear, neutral oil. There are many variables which affect the refining loss, such as the concentration and excess of caustic soda, nature and amount of auxiliary

FINISHED OIL STORAGE (Above). Soybean salad and cooking oil is stored in clean, covered metal tanks prior to shipment to salad dressing manufacturers, bakers and other users.

FILTER PRESS (Below). Materials used for bleaching are removed in filter presses such as the one shown here. Oil is forced through cloth, and the spent bleach is retained on the cloth.



CENTRIFUGALS. These machines, similar to cream separators, remove the "soapstock" from the oil, the first step in refining.

refining chemicals, degree and rate of heating and stirring, and finishing temperature.

The soap stock is converted to useful grease for soapmaking and other industries by boiling with dilute sulphuric acid, which renders any soap present into dark brown fatty acids containing many of the impurities originally present in the crude, as well as neutral oil that may have been absorbed in the soap stock.

Since the cost of the neutralizing loss is greater than all of the other processing costs put together, great care is taken to secure the greatest possible yield of neutral oil.

In recent years, the "batch" process described above has been replaced to a large extent by "continuous" refining methods, which greatly speed up the separation of soap stock and neutral oil through use of centrifugal force. Tall, slender bowls enclosed in steel cases rotate at 15,000 r.p.m., achieving a "G" or gravitational effect of over 13,000. After separation of the soap stock from the oil, the neutral oil is mixed with water and separated by centrifugals twice again, then dried by spraying through vacuum chambers.

There has been extensive research to improve the centrifugal process; one method calls for a soda ash treatment prior to caustic alkali refining. Somewhat lower over-all loss is claimed.

With soybean oil, refining losses with skilled kettle operation can be as low as those obtained with centrifugal equipment, but with other vegetable oils handled in large quantities, such as cottonseed, peanut, and corn, there is at least a 25 percent saving in the neutralization cost.

Another refining method which seems to hold great promise adapts a differential liquid-liquid separation of impurities from the oil with solvents such as furfural and propane. This idea stems from a method long in use for purifying lubricating oils.

BLEACHING

The neutralized, washed oil, which now contains few impurities, with the exception of color, odor, flavor, and possible traces of soap, is heated and stirred with a mixture of various absorptive agents. Prominent among these are activated carbons, Fuller's earth, and various other highly active, but harmless bleaching substances. Temperatures are fairly high, and the best practice is to agitate and heat under a vacuum to keep from contact with air.

The mixture is next put through a filter press to remove the spent bleaching earths. Degree of bleaching depends on the type and amount of bleaching agents, and whether the oil is to be used for shortening, margarine fat, or for salad and cooking oil. For the first two, bleaching must be rather vigorous, as trade standards and national law are strict about color.

HYDROGENATION

Key operation in production of margarine fats and shortening — "hard fats" — is hydrogenation. Hardening is achieved by the combination of hydrogen with fatty oils at high temperatures, in the presence of a reduced nickel catalyst.

Reduced nickel compounds vary widely in activity, but only a small fraction of 1 percent held on an inert carrier is required. The amount of hydrogen depends on the degree of hardening desired, for the amount absorbed down to perfect saturation would be in exact proportion to the iodine number of the oil. A catalyst first used for making shortening, and partly worn out by the process, is desirable for making margarine fat, since it gives the finished product suitable softening and spreading characteristics.

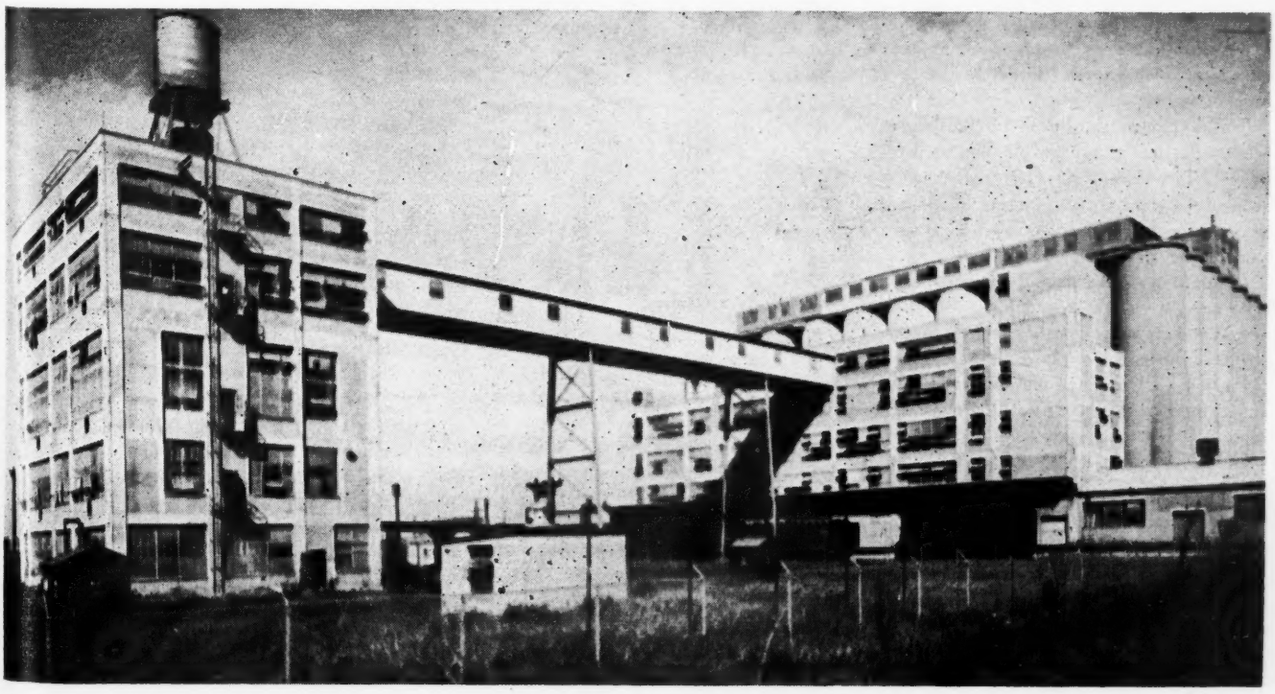
WINTERIZATION

If the soybean oil is to be made into salad oil, it is not, of course, hydrogenated, but is next subjected to a chilling process. Refined soybean oil is a natural salad oil, and seldom shows haze above 25°F. To pass the official cold test it must remain

(Continued on page 26)

TWO MILLION DOLLAR PLANT OF A. E. STALEY MFG. CO.

Hexane is used as a solvent in this new soybean oil extraction plant of the A. E. Staley Manufacturing Co. at Decatur, Ill. In the distance are storage elevators with a capacity of 5,500,000 bushels. The preparation building and extraction building (left) are connected by a high bridge. Between the mesh fence and pump house (small white building, lower center) are small pipes which are vents from underground hexane tanks having a storage capacity of 40,000 gallons. One of the five tanks is kept empty at all times, so that in case of emergency hexane in use in the building at the left can be dumped into the tank via a 6-inch line. Hexane is pumped into the extraction building from the pump house. Fire fighting equipment buildings are spotted at the four corners of the extraction building (one is visible at each side of the pump house). Just below the circular 8,000-gallon standpipe atop the extraction building is a 5,000-gallon insulated reservoir for chilled water, cooled to 58 degrees by refrigeration. This water is used in final condensation of hexane vapors.



Soybean CULTURAL PRACTICES in Indiana

By J. W. CALLAND, Central Soya Co., Inc.
Director of Agronomic Research

SIXTEEN HUNDRED soybean growers in 20 of the principal soybean counties* of Indiana answered questionnaires asking how they grew their 1944 soybean crop. This information was requested by their county agents. The growers reports cover 54,000 acres of soybeans. By summarizing their reports we can get a good look at the cultural practices used in these 20 counties, which grow 40 percent of the Indiana soybean crop.

The average grower harvested 34 acres of soybeans with a yield of between 21½ and 22 bushels per acre. Fifty-five percent planted their soybeans solid with a yield of 21.6 bushels, while 45 percent planted them in rows and got 21.9 bushels—three-tenths of a bushel extra. The greatest increase in yield for rows over solid planting was in Huntington County where rows gave 4.8 bushels more. However, solid planting outyielded rows by 2.9 bushels in Allen County. In 12 of the 20 counties rows gave better yields than solid plantings.

Growers in Tipton, Newton, Jasper, and Cass very definitely favor row planting with 91, 76, 71, and 70 percent in rows. Solid planting has a big edge in Jay, Allen, Adams, and Montgomery with 91, 82, 81, and 73 percent solid.

Those planting solid used 1.87 bushels of seed to the acre while row planters used .94 bushel. The reasons generally given for the swing from solid to row planting in Indiana are (1) the saving in seed, (2) better weed control and (3) earlier harvest.

In addition to these there is sometimes a difference in yield of as much as 10 bushels per acre between a clean row field and a weedy solid field.

Forty of each hundred planting solid cultivated their soybeans after planting. The other 60 did not. The survey does not show what steps were taken to kill weeds before planting, but the growers who did no cultivating of solid beans harvested 1.9 bushels less beans per acre. The greatest gain in yield due to cultivation was 6.1 bushels an acre for Carroll County. Cultivation of solid beans gave increased yields in 14 of the 20 counties.

The rotary hoe was used for 74 percent of the cultivating done on solid beans, the spike-tooth harrow 14 percent, the cultipacker 9, and weeder 3 percent. Sixty-one out of each hundred growers cultivated but once, 32 cultivated twice, and 7 cultivated three times.

USE CORN PLANTER

Ninety-two of each hundred growers planting in rows used the corn planter, five used the grain drill and three the beet and bean drill. An interesting comparison appears here. Beans planted with corn planter had an average row-width of 39 inches and a yield of 21.6 bushels; rows planted with the grain drill had an average width of 24 inches with a 23.6 bushel yield; while those planted with the beet and bean drill had an average width of 21 inches and a yield of 26.8 bushels. This difference in yield is apparently due to row-widths rather than to the implement used for planting row beans, since we get similar results by grouping the row-widths, regardless of implement used, into wide, medium, and narrow rows (See TABLE 1).

TABLE 1. Comparative Yields of Row Soybeans (706 Growers).

Growers	Planter Used	Average Row Width	Average Yield Per Acre (Bu.)
649	Corn Planter	39 in.	21.6
36	Grain Drill	24 in.	23.6
21	Beet & Bean Drill	21 in.	26.8
	Row-Width Groups		
	All wide rows	38-42 in.	21.4
	All med. rows	30-36 in.	22.2
	All narrow rows	18-28 in.	25.5

Seven percent of the row beans got one cultivation, 33 percent got two, and 60 percent three cultivations. Only four growers reported the fourth cultivation. Sixty percent of the cultivating was done with the regular cultivator, 31 percent with rotary hoe and the balance with the harrow and weeder.

Richland was the favorite variety in 1944 with 40 percent of the growers planting it. Twenty-six percent favored Dunfield and 18 percent Mandell which were the next varieties in order of popularity. The number of Lincoln growers increased greatly in 1945 when 38 percent had planted this popular new variety and 12 percent had planted Earlyanas.

TABLE 2. Choice of Varieties and Variety Yields.

Variety	Number of Times Used	Percent of Growers Using	Average Yields (Bu.)
Richland	535	40	21.3
Dunfield	348	26	21.0
Mandell	248	18	18.8
Manchu	79	6	19.3
Illini	49	4	20.3
Lincoln	38	3	26.1
Mukden	32	2	22.8
Earlyana	11	1	18.5
Others	13	1	21.3

The kind of soil planted to soybeans very definitely effected yields. Growers were asked to classify the soil type as dark, mixed, or light. Twenty of each hundred growers planted on dark soil with an average yield of 23.3 bushels, 72 classed the soil as mixed with a 20.5 bushel yield and 8 said light soil and 19 bushels. This spread of 4.3 bushels between light and dark soils was not as large as might have been expected but it again points out that while soybeans may yield comparatively better than other crops on light soils they also respond well to improved fertility.

SOIL PREPARATION AND YIELDS

Likewise, soil preparation has something to do with yields. Ninety-five percent plowed their fields and harvested 1.7 bushels more beans than those who only disked the land.

Apparently there are many fields in these counties which do not carry sufficient soybean inoculating bacteria. The growers quite generally realized this and 73 percent of them inoculated their soybeans and these took off 1 bushel more beans per acre than the growers who failed to inoculate. It is quite generally agreed that the cost of properly inoculating soybean seed is so small and the insurance value so high that it is only good business to inoculate. Moreover, the soybean crop will not add to the soil's

*Adams, Allen, Benton, Carroll, Cass, Clinton, Delaware, Grant, Huntington, Jasper, Jay, Madison, Miami, Montgomery, Newton, Randolph, Tipton, Warren, Wells, and White Counties.

supply of nitrogen unless these bacteria are present in sufficient numbers. The greatest average gain for inoculation was 3.5 bushels per acre for Warren County.

Table 3 indicates that the soybean crop has a long planting season. It appears that, in 1944 at least, any time from the first week in May to the last week in June had but little effect on yield. However, early planting of solid beans does increase the weed problem.

TABLE 3. Yields Based on Various Planting Dates—1944.

Planting Date	Number of Growers Planting	Percent Planting	Yield (Bu.)
May —			
1st week	34	2	18.6
2nd week	78	5	20.3
3rd week	151	10	20.6
4th week	294	19	20.4
June —			
1st week	465	30	21.2
2nd week	373	23	20.4
3rd week	121	8	21.5
4th week	40	3	20.2
July —	14	1	20.2
	Growers 1570		

These growers were asked to name the crop which preceded soybeans and the crop which would follow the soybeans. Both the preceding and the following crops are listed in Table 4.

TABLE 4. Preceding Crops — Following Crops.

Preceding Crop	Number of times	Percent of total
Corn	1151	73.0
Corn, Soybeans	97	6.0
Corn, Oats	9	.6
Corn, Clover	7	.4
Corn, Wheat	5	.3
Soybeans	103	6.5
Soybeans, Oats	6	.4
Oats	68	4.3
Oats, Wheat	3	.2
Wheat	35	2.2
Wheat, Hay	1	.1
Clover, Hay	50	3.2
3 or more crops	7	.4
Others	38	2.4

Following Crops	Number of times	Percent of total
Corn	265	17.0
Corn, Soybeans	24	2.0
Corn, Oats	67	4.0
Corn, Clover	6	.4
Corn, Wheat	26	2.0
Soybeans	104	7.0
Soybeans, Oats	39	3.0
Soybeans, Wheat	24	2.0
Oats	359	24.0
Oats, Wheat	106	7.0
Oats, Hay	19	1.0
Wheat	398	26.0
Wheat, Hay	1	.1
Clover, Hay	40	3.0
3 or more crops	25	2.0
Others	16	1.0

Corn seems to have preceded soybeans in about 77 percent of the fields and to have followed soybean crop about one time out of five. Soybeans preceded soybeans in about 10 percent of the fields and follow to about the same extent. Oats follow soybeans in one-third of the fields and wheat one-third. Thus a rather definite crop sequence of corn, soybeans, small grain, is indicated on probably two-thirds of the farms.

USE OF FERTILIZER

One out of five growers fertilize the soybean crop, the average application is 105 pounds to the acre. Seventy-seven percent of the fertilizer is applied in the rows, 14 percent broadcast and 9 percent plowed down. Fifty-six percent of the growers who used fertilizer said the results were good, 11 percent fair, 18 percent poor, and 15 percent gave results as "unknown." Forty-five of each hundred growers fertilized their soybeans in Jasper County, 40 of each hundred in Cass, but only two of each hundred in Allen County. The brands of fertilizer used indicates that most of the growers fertilizing soybeans favor the kind of fertilizer they have been accustomed to use on the corn crop.

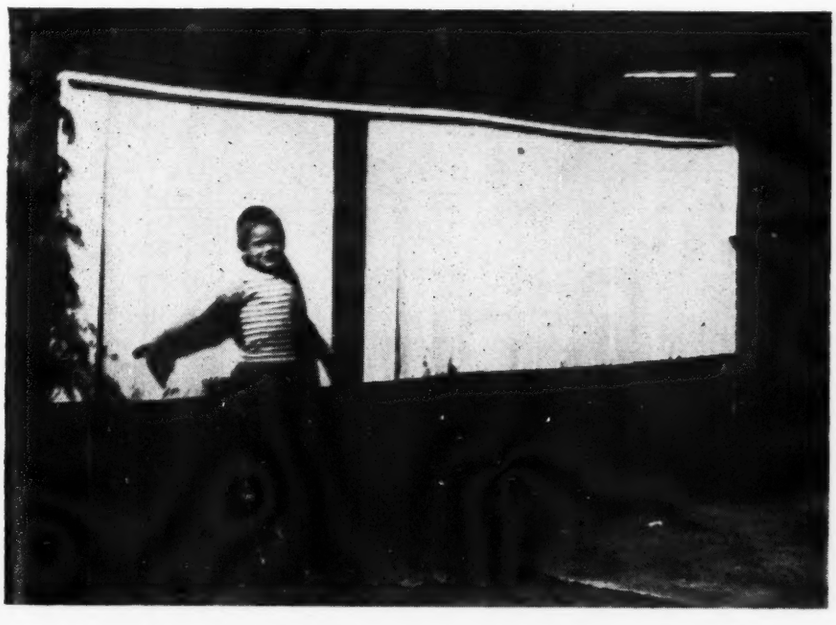
About half of the growers own combines and 73 percent say that the combine scatters the straw. The balance say their straw is left in bunches. Table 5 shows the popularity of the 5 and 6 foot cuts. Almost three-fourths of the combines are these two sizes.

TABLE 5 Number and Size of Combines Owned.

Width of cut in feet	Number of each size
3½	18
4	67
5	236
6	285
7	27
8	40
9	9
10	8
12	29
	Total 719

Twenty-two percent of the 1944 soybean crop was harvested in September, 73 percent in October and the remaining 5 percent in November.

—s b d—



Tests with Soybean Oil Paint

Above, Edward Kessler, "Soyboy," stands in front of a paint test fence of the Soybean Paint and Varnish Institute, St. Louis, Mo. Edward is a grandson of John J. Kessler, the president.

He is pointing to two single panels on the fence, one on his right and the other on his left. The board on his right was painted with white 100 percent soybean oil paint 6 years ago. At a distance it still looks good but a close up shows it is ready for repainting. This was a two-coat job. The paint has worn gradually and smoothly. There has been no checking, scaling, peeling or blistering.

The dark panel at Edward's left is a barn red 100 percent soybean oil paint also painted 6 years ago. It is still in first class condition and the way it looks now will last for another 6 years before it needs repainting.

This particular test fence, located in St. Louis County, Mo., has 23 panels in all, each one painted with different paints and applied at different times. Most of the paints are 100 percent soy oil paints, but quite a few other paints of nationally known standard brands and using different drying oils are being exposed for the sake of comparison.

Edward has been featured as "Soyboy" in publicity prepared by the Institute.

NEW VARIETIES BY BURDETTE PLANTATION

Ogden topped all other soybean varieties in yield per acre in the Burdette Plantation, Burdette, Ark., variety tests in 1945, according to the report of the plantation.

Average yield per acre for Ogden was 44 bushels.

Other yields follow: Burdette 56, 37 bu.; Burdette 13, 36 bu.; Burdette 19, 32 bu.; Strain 8-43-M, 32 bu.; Burdette 20, 32 bu.; Burdette 26, 32 bu.; Strain 21-43-M, 31 bu.; Burdette 9, 31 bu.; Arksoy 2913, 30 bu.; Burdette 95, 29 bu.; Strain 13-43-A, 29 bu.; Ralsoy, 28 bu.

The plantation reports that its entire 1946 crop will be planted to the new varieties, Burdette 13 and 19, which yielded on an average of 9 bushels per acre higher than Arksoy and Ralsoy the past 2 years.

● *Use of soybean oil meal may improve fur animal rations and obtain superior pelts, experiments indicate.*

Soybean Oil Meal in the FOX and MINK Ration*

By CHARLES F. BASSETT

Director, Fur Animal Experiment Station.
Fish and Wildlife Service,
U. S. Department of the Interior

NUMEROUS experiments have been conducted at the Fur Animal Experiment Station to determine the desirability of soybean oil meal as a partial substitute for raw meat in the fox ration. Fifteen such experiments were conducted between 1937 and 1940. Some were planned to determine whether soybean oil meal could be used in the ration of adult foxes and of growing pups as a partial replacement for raw meat. Other experiments were designed to determine the desirability of using soybean oil meal manufactured by different methods and the desirable amounts to feed. Still others were planned to determine the relative economy of using soybean oil meal in place of meat and how it compared in this respect with other dehydrated products of high protein content.

These experiments demonstrated that soybean oil meal is a satisfactory substitute for at least one-half of the meat in the ration of adult and yearling vixens during the breeding, gestation and suckling periods. With such a ration (Table 1., Ration 2) fox vixens may be expected to come in heat, mate, and whelp normal litters. Pups from such litters, handled in accordance with accepted management practices, should be normal in size and appearance at weaning.

Six summer experiments were conducted from 1937 to 1941, inclusive, with weaned fox pups. Soybean oil meal was used in varying amounts, ranging from 4.8 percent (in diets that were moistened before feeding) to 30.5 percent in the cubed feeds. The net results of these experiments indicated that soybean meal, when properly supplemented, could be used as a complete meat substitute for fox pups without detriment to their growth, development or pelts. In addition, the relative economy of soybean oil meal, when compared with the cost of raw meat, resulted in significant savings in production costs.

Soybean oil meal is manufactured by the hydraulic pressure, expeller, and solvent processes. In order to determine whether soybean oil meal manufactured by each of these methods was equally desirable for inclusion in the ration of growing and adult foxes, experiments were conducted during the summer, fall and early winter of 1939. Sixty adult vixens and 72 fox pups in separate experiments indicated that there was no significant difference in the general health, feed consumption, and average liveweight of adult or pup foxes fed the three types of soybean oil meal.

Pelts from pups receiving the solvent process oil meal, however, were conspicuously dull and lacking in sheen.

All other pelts, both adult and pup, were normal in appearance. On the basis of these results, we feel that the rations fed both adults and pups from July 1 to January 1 can include soybean oil meal manufactured by either the hydraulic pressure or expeller process. Solvent process oil meal, while satisfactory in the summer maintenance of adults, should not be included in the rations fed growing foxes.

One of the chief considerations in the use of soybean oil meal and similar protein feeds in fox and mink rations is the economy in feed costs. Many high protein feeds have been tested, but none has been as economical as soybean oil meal. In experiments where animals in the control group received rations containing 40 percent of raw meat, while other groups received beef meal, liver meal and soybean oil meal, the savings in feed costs totaled 50 percent. How much of a saving there was depended, of course, on the amount of meat or desiccated product that was replaced.

Soybean oil meal can also be satisfactorily substituted for a portion of the raw meat in the mink ration. This has been experimentally demonstrated at the Station. In

*Rations discussed in this article are given in Table 1. These rations have proven satisfactory.

from RAW COTTON to FINISHED BAGS..

FULTON BAGS made in our plants from the raw cotton to the finished bag assures you a safe and economical container for shipping soybean meal.

Quality — Appearance — Strength — these factors are all "in the bag" when you use FULTON BAGS for your meal, pellets and feeds. FULTON artcraft printing of your brand is a valuable sales aid. Remember, too, that your soybean meal will not heat when stored in cotton bags. For the best in cotton bags, always specify FULTON.

FULTON BAG & COTTON MILLS

Manufacturers Since 1870

Atlanta St. Louis Dallas Minneapolis Denver
New Orleans Kansas City, Kan. New York

Fixo Says:

JOIN THE FRIEND MAKING PARADE

Nod-O-Gen is the great "friend maker." It has been winning . . . and holding . . . a growing number of dealer-friends for over a generation. Through Nod-O-Gen dealers have won . . . and held . . . more and more grower-friends. Join the Nod-O-Gen friend making parade. Book your spring requirements today, through your jobber or direct.

Thru Legitimate Jobbers or Direct

Farm Laboratory Division THE ALBERT DICKINSON COMPANY
Chicago, Illinois P.O. Box 788 Founded 1854

Southern Office and Warehouse: 218 South President Street, Jackson, Mississippi

NOD-O-GEN The Pre-Tested Inoculator
The Crop and Profit "Pepper Upper"

1942, ration No. 3 (Table 1.) was fed to 44 kit mink from July 1 to pelting. Forty-three other kits served as controls and received a ration containing 40 percent of raw meat and 5 percent of fresh liver. Twenty-eight and 30 animals, respectively, were pelted from the two groups, and the furs were judged in New York City by two experts from the fur trade. In their opinion the pelts from animals receiving the ration containing soybean oil meal were more desirable than those from the minks receiving the raw meat and liver, a large number of which were poorly furred and off-color. There was no significant difference between minks of the two groups in average liveweight and general health. Soybean oil meal in this ration effected a saving of 11.9 percent in the feed cost.

In 15 summer experimental rations feed consumption of the fur animals receiving the soybean oil meal rations given as a wet mix was good, for 96 to 99 percent of the entire ration was consumed. During the breeding season, feed consumption ranged from 89 to 94 percent; gestation period from 84 to 96 percent, and during the suckling period from 81 to 97 percent. Variations in feed consumption depended upon the temperature, climate, composition of the ration, and season of the year.

BASSETT

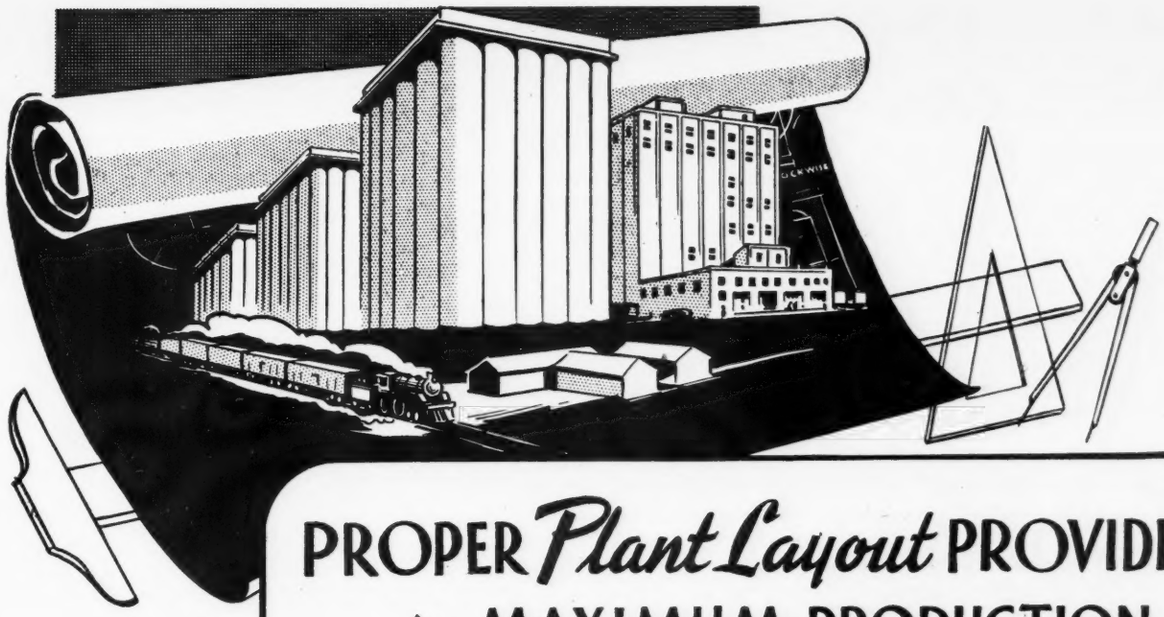
TABLE 1. — Composition of Fox and Mink Rations.

Ingredient	Fox Rations 1	Fox Rations 2	Mink Rations 3	Mink Rations 4
	percent	percent	percent	percent
Beef meal	4.8	2.4	.....	.....
Soybean oil meal	4.8	2.4	6.0	8.3
Liver meal	2.4	1.2	.....	.....
Dry mixture or commercial feed(5)	25.0	25.0	25.0	20.0
Ground green bone (6)	5.0	5.0	.....	.....
Vegetables	5.0	5.0	10.0	10.0
Water or skimmed milk	53.0	38.6	32.6	36.3
Raw meat	.....	20.0	20.0	20.0
Liver	.....	.....	5.0	5.0
Concentrated cod liver oil	.....	.4	.4	.4
Bone meal or ground limestone	.....	.....	1.0	.....
TOTAL	100.0	100.0	100.0	100.0

1 Feed to adult foxes June 1 to January 1; pups, August 1 to January 1.
2 Feed to adult foxes January 1 to June 1; pups, weaning to August 1.
3 Feed to adult minks July 1 to January 1; kits, August 1 to January 1.
4 Feed to adult minks January 1 to July 1; kits, weaning to August 1.
5 Any one of the following home-mixed feeds may be used:

Ingredient	No. 6	No. 7	No. 9	Ingredient	No. 6	No. 7	No. 9
	lbs.	lbs.	lbs.		lbs.	lbs.	lbs.
Bread meal	100	150	100	Wheat bran	.....	.....	25
Oatmeal	.....	150	100	Yeast (inactive)	.....	.....	25
Wheat germ meal	50	50	100	Corn flake waste	100	.....	.....
Fish meal (vacuum dried)	50	100	100	Corn germ or oil cake meal	100	.....	.....
Alfalfa leaf meal	50	50	50	Kelp meal	75	.....	.....
Skimmilk powder	50	.....	50	TOTAL	575	500	575
Linseed oil meal	.....	.....	25				

6 If ground green bone is not avaialble, use either 2.0 percent ground limestone or bone meal and increase water accordingly.



PROPER *Plant Layout* PROVIDES

★ MAXIMUM PRODUCTION
★ GREATEST ECONOMY

SPECIALIZING IN SOYBEAN MILL *and* PROCESSING PLANT LAYOUTS

Your mill or processing plant represents an investment of thousands of dollars. This investment must continue to earn a profit . . . and during the coming months these earnings must increase to meet new higher costs.

WHAT IS THE ANSWER?

The answer is simply this: A complete survey or analysis of present methods which will reveal "traditions" that need correcting . . . that when modernized will open the way to those increased earnings so badly needed.

HOW CAN IT BE ACCOMPLISHED?

Merely by calling in trained BETTER METHODS industrial engineers. The cost of our survey is soon made up in the savings accruing from increased efficiency.

WRITE OR WIRE TODAY

★

BETTER METHODS INDUSTRIAL ENGINEERING CO.

53 W. JACKSON BLVD., CHICAGO 5, ILL.

HARTINGTON MAN HIGH IN

Nebraska Contest

William Massey, Hartington farmer, won over 117 other entrants in Nebraska's second 5-acre soybean yield contest, it was announced at the finish-up meeting at Fremont, Nebr., January 15.

Massey, a former Iowa farmer who decided that soybeans did not offer any special production problem in Nebraska, grossed $67 per acre on a 39-acre field of Richlands and averaged 39.7 bushel per acre on the 5 acres entered in the contest, reports J. C. Swinbank, secretary of the Nebraska Grain Improvement Association.

The beans were raised on corn ground without the aid of manure or commercial fertilizers. They were "close drilled" with an ordinary grain drill at the rate of 120 pounds per acre. Planting date was May 10, one of the earliest dates reported by contestants. No further operations were performed on the field until harvest.

Soybeans are taking a definite place in the crop rotation on many eastern Nebraska farms. They are planted both before and after corn. This practice reduces corn root worm damage which tends to increase when corn follows corn. Farmers report that the corn yields on soybean ground average 8 to 10 bushels per acre more than on land where corn followed corn.

There were entrants from 16 counties in the contest. Almost half of the entrants were from Dodge County.

Average yield of the 10 prize winning fields was 35.4 bushels per acre compared with 38.3 for the winning fields of the more favorable 1944 season. Average yield of all contestants was 24.1 bushels per acre.

POPULAR VARIETIES

Richland, Lincoln, Illini, Mukden and Dunfield, in the order named, were the most popular varieties used by the contestants. A comparison of the average yields obtained from the different varieties is shown below:

Variety	No. of Fields	Ave. per A. Yield
Lincoln	27	25.3
Richland	34	22.1
Illini	7	20.3
Mukden	6	18.1
Dunfield	5	21.3

Fall or spring plowing, followed by a number of tillage operations prior to planting to destroy successive crops of weeds was the plan followed by 75 percent of the contestants. Disking instead of plowing was not uncommon where cornstalk ground was being prepared. A few farmers plowed in the fall, two used duckfoot subsurface tillage implements, one listed and split the ridges at planting time and one of the contestants "chiseled" his field for the principal seedbed tillage operation.

On the average, highest yields were obtained when plantings were made with a grain drill with part of the spouts closed, resulting in 14 or 21 inch rows. Yields were approximately 4 bushels greater than those from solid planting.

Certified seed was used by about half of the growers, producing a crop which averaged over 2 bushels more per acre than the crop from uncertified seed. Seventy-seven percent of contestants inoculated their seed to obtain a yield almost 3 bushels higher than that from uninoculated seed.

WILLIAM MASSEY

All contestants mentioned weed control as one of the major problems in soybean production.

In addition to Massey, those placing among the first 10 were: Second, Albert Bierman, Dakota City, 38.3 bushels with Lincoln; third, Rolyne Kammerer, North Bend, 35.9 bushels with Richland; fourth, H. J. Kitzelman, Beatrice, 35.5 bushels with Lincoln; fifth, Ralph George, South Sioux City, 35.3 bushels with Lincoln; sixth, Jack Orr, Dakota City, 34.8 bushels with Lincoln; seventh, James Wirka, Cedar Bluffs, 34.7 bushels with Lincoln; eighth, George Bean, Dakota City, 34.0 bushels with Richland; ninth, M. G. Leamer, Dakota City, 33.9 bushels with Lincoln; and tenth, Harry Hanson, Waterbury, 31.7 bushels with Manchu.

Sponsors of the 1945 contest were the Nebraska Grain Improvement Association, Nebraska College of Agriculture extension service, and the Omaha and Fremont chambers of commerce. About 150 contestants, county agents, business men and processors attended the Fremont meeting.

Speakers included: Dr. Wm. J. Hales, research consultant, Dow Chemical Co., Midland, Mich.; J. C. Hackelman, extension agronomist of the University of Illinois; and J. C. Swinbank, D. L. Gross and J. W. Fitts of the Nebraska College of Agriculture staff.

—s b d—

BIG ACREAGE

An extremely wet spring and a decision to risk a large acreage of soys rather than corn planted in late June, resulted in Hans N. Nielsen and his father, H. T. Nielsen, of Fremont, Dodge County, Nebr., being two of the largest soybean producers in that state in 1945.

Together they planted and harvested 243

acres of Richland and Earlyana soybeans on a combined total of 580 acres of level, heavy Platte Valley soil.

The decision to plant such a large acreage was reached about June 20 after it had been impossible to plant much corn up to that date. The younger Nielsen's experience with 40 acres of soybeans planted June 27 and 28 in the 1944 season had convinced him that soybeans planted that late were a better bet than corn. The seed and soybean machinery were bought and within two days the beans were being planted. All were in the ground by July 3.

The entire acreage averaged 20 bushels of No. 1 beans per acre with some fields yielding up to 26 bushels. All beans ripened before frost.

Wartime prices for soybeans have increased the acreage somewhat in Dodge County, but the largest factor in the increase was the use of soybeans as a catch crop in 1944 and 1945 when the wet seasons delayed corn planting. The 1945 acreage in Dodge County was estimated at from 10,000 to 12,000 acres, the largest of any county in Nebraska.

—s b d—

FARM JOURNAL OBJECTS TO FREE TRADE POLICY

Free trade established between the U. S. and the Philippines 30 years ago has contributed not only to the impoverishment of American farmers, but Philippine farmers as well, charges January *Farm Journal.*

The *Journal,* in an article entitled, "Let's Protect Us and the Filipinos," states that the oil, sugar and tobacco crops shipped to the U. S. have contributed chiefly to the enrichment of absentee landlords, many of them American corporations.

"Filipino farmers suffered severely from beriberi and hookworm. This was primarily due to the fact that they didn't get enough to eat. Dr. Armando Dalisay, senior agricultural economist of the Philippine government, says this happened because the crops they produced to export to America—and enrich absentee landlords—crowded out the crops they should have grown for food for themselves."

The *Journal* plunks for a gradual abandonment of free trade, which "with time for the islands to readjust, would help direct them toward diversification, self-sufficiency, improved diets, and higher living standards."

—s b d—

CHINESE OILSEED OUTPUT HAS RISEN

Free China's production of soybeans, peanuts, and sesame in 1945 was larger than in the 2 preceding years, and with the exception of soybeans, exceeded the 1938-1942 average, reports USDA's *Foreign Crops and Markets* for January 7. Oilseed estimates for all-China have not been available since Japanese occupation.

Soybeans are China's most important oilseed crop. In 1936, the last year for which complete figures are available, the outturn was officially estimated at 217 million bushels. Despite the fact that this country is the world's largest producer of soybeans, exports are not important because of the tremendous domestic consumption.

Peanut and sesame seed production in Free China have increased since 1937.

FREE CHINA: Area and production of soybeans, 1938-1945, compiled from consular reports.

Year	Area	Production
	1,000 acres.	1,000 bu.
Average 1938-1942	3,744	64,967
1943	3,637	61,241
1944	3,515	60,535
1945	3,497	62,354

BREAD STANDARDS CASE MAY BE UP IN SUMMER

Edward J. Dies has been authorized to act for the American Soybean Association in the preparation and presentation of evidence in the Bread Standards case before the Food and Drug Administration. When the case finally goes to a hearing representatives of the growers will be present.

Mr. Dies is chairman of the board of the Soy Flour Association and chairman of the board of the National Soybean Processors Association, both parties to the case. For some time preparation of evidence has been underway. Because of certain war restrictions still in effect the hearing probably will not be held before late summer at the earliest.

Cornbelt farmers who grow soybeans are greatly interested in this case. Food and Drug Administration, on the basis of evidence then available, 3 years ago proposed to exclude 3 percent soy flour as one of the optional ingredients in white bread, rolls and buns in the proposed new bread standards, although two previous standards had made no such exception. There was a loud and prolonged outcry from Cornbelt congressmen and senators as well as soybean growers for thus attempting to take away a part of the growers' market on the basis of incomplete evidence for such action. Finally further hearings on standards were postponed for the duration, and bakers have been permitted to continue using the product so highly endorsed by the various branches of the government, up to 3 parts to every 100 parts of white flour in white bread.

E. J. DIES

Meantime a substantial volume of public and private laboratory work has gone forward which many authorities declare establishes beyond a shadow of doubt the right and desirability of soy flour as an optional ingredient up to 3 percent without special labeling.

A somewhat similar situation existed at the Bureau of Animal Industry which, after a scientific and judicious survey of all evidence, a few months ago issued a regulation permitting optional use up to 3½ percent of soy flour as a binder in sausage in federally inspected houses. Results have proved eminently satisfactory, it is stated in the trade and in Washington.

PLAN SMALL ACREAGE DECREASE IN INDIANA

Growers in eight Indiana counties plan to decrease soybean acreage only 4 percent in 1946, according to an extensive survey recently completed in those counties by J. W. Calland, director of agronomic research for Central Soya, Inc.

Seven hundred and fourteen growers reported from Adams, Allen, Benton, Huntington, Jasper, Jay, Tipton and Wells counties. These growers planted 26,422 acres in 1945, plan to seed 25,343 acres to soybeans in 1946.

The survey indicates a decided shift to Lincoln in 1946, from 27 percent of the total acreage planted to 69 percent in 1946. Lincoln topped all varieties reported in average yield at 30.4 bushels per acre. Richland was second with 25.8 bushels, Dunfield third with 23.3 and Mukden fourth with 23.2. Average yield of Earlyana was 22.9 bushels.

Continuation of the trend toward planting in rows is also indicated, since 57 percent of the growers in these counties reported that they planted in rows in 1945, but 74 percent plan to plant in rows in 1946.

—s b d—

ALL SHOULD SUBSCRIBE

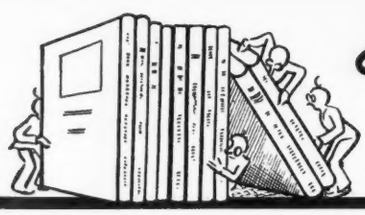
To the Editor:

We wish to congratulate you for the fine publication you are offering the public on the up-to-the-minute information about soybeans.

Every seed producer should be a constant subscriber for this valuable paper.

Keep the good news coming.

O. C. RUSSELL & SON,
Muncie, Ind.



Publications

COMPARISON OF THE GROWTH-PROMOTING VALUE FOR RATS OF BUTTERFAT, OF MARGARINE FAT AND OF VEGETABLE OILS. By K. M. Henry and S. K. Kon, National Institute for Research in Dairying, University of Reading; and T. P. Hilditch and M. L. Meara, department of industrial chemistry, University of Liverpool. *Journal of Dairy Research*, March 1945, p. 45-53.

A series of experiments with rats is described in which the growth-promoting properties of butterfat have been compared with those of the solid and liquid fractions of butterfat, with margarine, soybean and other vegetable oils.

By incorporating the fats in liquid skim milk, no differences were detected between the growth-promoting properties of butter and margarine, nor were there any differences observed between growth promoting values of butterfat, arachis oil, cottonseed or soybean oil. The butterfat was rather less well utilized than the less saturated oils, but the differences were not significant.

It is concluded from these experiments that it is unlikely that butterfat possesses superior nutritive properties to those of other fats.

SOYBEANS AND PEANUTS, by Dr. Karla Longree, professor of foods and nutrition, Hampton Institute. 48 pages. 20c. Hampton Institute Press, Hampton, Va.

A readily usable summary of the literature on the nutritive value of soybeans and peanuts. The booklet also contains notes on the proper cookery of soybeans and peanuts, as well as a group of easily-prepared recipes, tested by Dr. Longree's students in experimental cookery classes at Hampton.

Dr. Longree's booklet will be of special interest to home economics teachers in high schools and colleges because of its presentation of tables and other data on the cost of soya protein compared with the cost of milk, egg, and fish protein; amino acid content in animal and plant proteins; the composition of soya flour and sprouted soybeans; the mineral content of peanuts; and other information useful in acquiring a better understanding of these two main sources of vegetable protein. A bibliography of the literature cited is also included in the booklet.

Dr. Longree, who joined the staff of Hampton Institute in 1941, is a native of Germany and has been in this country since 1933. She became an American citizen in 1939.

ACTION SPECTRUM FOR THE PHOTOPERIODIC CONTROL OF FLORAL INITIATION IN BILOXI SOYBEAN, by M. W. Parker, S. B. Hendricks, H. A. Borthwick, and N. J. Scully. *Science*, 1945.

The effectiveness of light applied to Biloxi soybean leaves during the middle of the dark period to prevent floral initiation was determined at various wavelengths.

Floral initiation can be suppressed by interrupting the dark period with light of sufficient energy from any region of the visible spectrum, but there are two regions of maximum efficiency, one in the yellow, orange and red and the other in the violet near 4,000 a. u.

SOYBEAN CULTURE IN EGYPT. *Bulletin de l'Union des Agriculteurs d'Egypte.*

The culture of soybeans in Egypt has not been taken up seriously until recently, but the writer feels that the crop has a good future there as soils suitable for its culture are readily found.

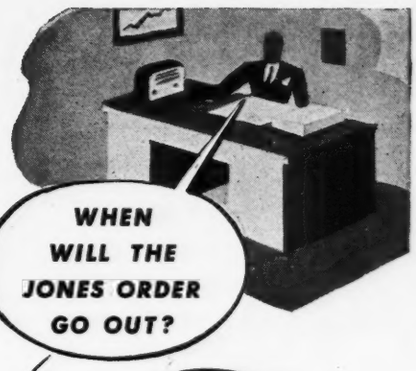
In general such soils are found in the north of the Delta, in the deserts of Mariout and Sinai and their oases, where the soil is sandy enough, and where soys can be grown under irrigation.

It is suggested that soybeans be planted in rows like cotton, in rotation with barley, or on rice soils.

The crop is grown between March and August.

No walk . . . no wait . . . no waste

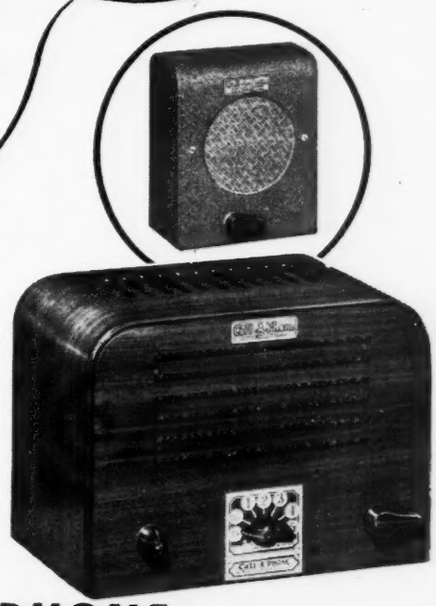
with SEEDBURO INTER-COMMUNICATION SYSTEMS



Save Time—You can talk to any key man in your plant without leaving your desk . . . when you install a Seedburo Inter-Communication System. It is not necessary for your men to leave their work. You can give instructions, ask questions, and get information with no loss of time. It's the modern way to get things done with a minimum of effort, errors and interruptions.

Efficient Service—Seedburo Inter-Communication Systems are highly perfected products of specialized engineering skill and long years of exhaustive research. They are rendering thoroughly efficient service in seed houses, mills, elevators and industrial plants throughout the country.

Economical to Use—The cost of an Inter-Communication System is small in comparison to the enormous dividends it pays in the saving of time and manpower. Once installed it costs but a few cents per month to operate.



CALL-A-PHONE Recommended for businesses that require simple installations. You may start with one Master Station and one Sub-Station. Priced from $55.00 and up. Write for circular giving complete information.

Models to Suit Every Need

Let us help you select proper equipment to meet your requirements. No inter-communication problem is too large for our engineering department. Our line is complete. Tell us your problem and we will make recommendations without charge.

A COMPLETE STOCK OF EQUIPMENT AND SUPPLIES Seedburo products are well known. There are over 400 different items of Equipment and Supplies . . . used in testing and handling grain, seed, beans, flour, coffee, tobacco, sugar, soap, starch and others. All merchandise fully guaranteed. Write today for your copy of Seedburo Catalog and Reference Book.

FLASH-A-CALL

This system furnishes much greater volume. It is particularly adaptable for larger plants and gives instant, complete plant coverage. It is today's most complete, most practical system. Prices range from $57.75 and up.

SEEDBURO

EQUIPMENT COMPANY

629 BROOKS BUILDING • CHICAGO 6, ILLINOIS

GRITS and FLAKES... FROM THE WORLD OF SOY

After 47 months in the army, Capt. Alvin (Gene) Gourley has returned to his former position as soybean oil meal sales representative for Spencer Kellogg & Sons, Inc., in Des Moines, Iowa. Gene served with the tank destroyers of the 9th Infantry Division abroad.

* * * *

Arrangements have been completed for the opening of the west coast office in Los Angeles for the distribution of products of Central Soya, Inc., in the states of California, Oregon, Washington, Arizona, New Mexico, Nevada, Wyoming, Idaho, Utah, Montana, Colorado and Texas. The territory will be under the supervision of Paul S. Cummins, who has been with Central Soya for 6 years.

* * * *

Bronson Woodworth, formerly assistant general purchasing agent for McMillen Feed Mills division of Central Soya, Inc., Ft. Wayne, Ind., has been appointed sales manager of Mississippi Valley Grain & Feed Co., at Muscatine, Iowa.

* * * *

Group life insurance for Bemis Bro. Bag Co. employees and their families has been provided by the firm. Eligible employees are covered by the insurance without medical examination and without cost, which is borne entirely by the Bemis Co.

* * * *

Forked Deer Soya Mills, Inc., Dyersburg, Tenn., will build a $350,000 soybean processing plant. Murray Weakley is president, Thomas Baker, executive vice president and general manager, and C. B. Ford, secretary-treasurer.

* * * *

Construction has begun on the new processing plant of the Galesburg (Ill.) Soy Products Co., to replace the one destroyed by fire last June.

* * * *

Chase Bag Co. announce from their executive offices located at 155 E. 44th St., New York City, that they will celebrate the 100th anniversary of their business in 1946 with the erection of a modern 100,000 square foot, one-floor, brick and concrete building in St. Louis. F. H. Ludington, president of the company, states that this will be one of the most complete and efficient plants of its kind ever erected.

* * * *

F. W. Ayers, until recently on the sales-service force of the Bemis Bro. Bag Co. at Peoria, Ill., has been transferred to the Bemis plant at San Francisco.

* * * *

R. N. Conners, vice president and general sales manager of the Chase Bag Co., announces the appointment of Bradley Barr to the position of sales manager of the Kansas City branch.

* * * *

Outlay of Spencer Kellogg & Sons, Inc., for peacetime expansion will run close to 3 million dollars, according to President Howard Kellogg. Construction work has started on the new soybean processing plant in Bellevue, Ohio. The company also plans an addition to its plant in Long Beach, Calif.

* * * *

Speakers at the annual Remington Soybean Show at Remington, Ind., January 8 included: Ward Calland, Central Soya, Inc., and Dr. F. A. Frank and Prof. K. E. Beeson of Purdue University.

* * * *

The Borden Co. plant in Elgin, Ill., has announced the construction of new units for the production of Soyco, soy albumen whipping agent. Whitsen Products Division, distributors of Soyco, will transfer production of soy nuts from Chicago to Waterloo, Iowa.

* * * *

Dr. K. J. Seulke has been appointed director of nutrition for the Cooperative Feed Dealers, Inc., Binghampton, N. Y. He is a veteran soybean expert and for the past several years has been director of research development for the A. E. Staley Mfg. Co.

* * * *

Dr. G. E. Hilbert, who perfected the method of making glucose from wheat, succeeds Horace T. Herrick as chief of the Northern Regional Research Laboratory at Peoria, Ill. Mr. Herrick will be assistant chief of the Bureau of Agricultural and Industrial Chemistry.

SEWALL D. ANDREWS

LIEUT. COL. ANDREWS WITH GENERAL MILLS

Change in the name of the vegetable oil and protein division of General Mills to "chemical division" is announced by Harry A. Bullis, company president. "The new name," Mr. Bullis explained, "is more descriptive of our expanding activities in the organic chemical field." These activities, under the direction of Whitney H. Eastman, president of the chemical division, include a soybean processing plant at Belmond, Iowa, construction of three technical soybean oil refining units — also at Belmond, a polyamide resin plant at Minneapolis, and research projects on soybean protein and fatty acids being conducted at Minneapolis.

Sewall D. Andrews, Jr., former director of purchases for General Mills and recently discharged from the Army as a lieutenant colonel, has been appointed director of sales for the chemical division, with headquarters at Minneapolis, Mr. Eastman stated.

Lt. Col. Andrews served overseas as general purchasing agent for Advance Section, Communications Zone, the headquarters that directly supplied and supported four American armies in Europe.

—s b d—

HALF VEGETABLE OIL PRODUCTION NOW SOY

Total factory production of soybean oil for the period from January to September 1945 was 1,057 million pounds, or over half the total edible vegetable oils produced during that period, reports the Bureau of Agricultural Economics in the *Fats and Oils Situation* for December.

Total factory production of edible veg-

etable oils during the January-September 1945 period was 2,092.1 million pounds. Production of cottonseed oil, the only other oil of comparable volume with soybean oil, was 788.2 million pounds.

Production of other edible oils in million pounds included: corn oil 159.8, edible olive oil 4.3, and peanut oil 82.4.

—s b d—

OIL CHEMISTS TO NEW ORLEANS

Announcement of the 37th annual meeting of the American Oil Chemists' Society in New Orleans at the Roosevelt Hotel May 15-17, is made in the January issue of *Oil & Soap*. Chairman is Col. H. P. Newton, assistant director of the Southern Regional Research Laboratory. Assisting him as chairman of the technical program is A. M. Altschul, also of the laboratory staff.

Nominations for officers to be elected at this meeting are now being received by Chairman H. S. Mitchell of Swift and Co., Chicago. By custom, the first vice president, S. O. Sorensen of Archer-Daniels-Midland Co., Minneapolis, has been named candidate for the presidency, to succeed Robert R. King of Sherman, Texas.

—s b d—

MOORE ROSENQUIST

ROSENQUIST AND MOORE WITH UNION SPECIAL

Appointment of Lieut. Com. Clarence L. Rosenquist and Major Don R. Moore as assistant managers of the Cincinnati and St. Louis offices of the Union Special Machine Co. is announced by T. S. Whitsel, general sales manager. Both men have returned recently to the company after leaves of absence spent in the armed services.

Rosenquist entered the Navy to assist in its purchasing program in September 1942.

Shortly after V-E Day, he was appointed to the Textile Industrial Intelligence Service for the purpose of investigating any developments which might have been made in German sewing machinery and sewing production methods.

Moore entered the service in August 1941 in the engineering division of the Quartermaster's Depot at Jeffersonville, Ind.

There were various assignments culminating in his appointment to the Quartermaster General's Office at New York City on inspection and quality control.

Major Moore is well known to many members of the needle trades through his work in Union Special's St. Louis and New York offices.

EXPERIMENT STATION

Delta Study It is apparent from the number of inquiries into the merits of various labor saving practices from delta planters that cropping systems on many plantations will be greatly modified because of the shortage of labor. In this connection experiments were conducted at the Delta Experiment Station, Stoneville, Miss., in 1944 to evaluate various methods of planting soybeans.

In one test the relation of row and drill or broadcast plantings at different dates of planting was studied. Row and drilled plantings of Ogden soybeans were made April 17, May 8, May 29, and June 19. Those in rows were planted flat at the rate of 40 pounds of beans per acre, with rows 40 inches apart. The drilled plots were planted with a disk grain drill (disks 9 inches apart) at 75 pounds per acre. Four replications of the row and drilled plots were made at each date of planting. Before making the first planting the entire test area was thoroughly disked, killing all weeds. At each subsequent planting, plots remaining to be planted were again disked. Thus, in all plantings except the first, at least two crops of weeds were killed before planting.

The counts of number of plants per square foot show considerably larger numbers in the drill planting, but between dates of planting the differences are not large. The yields obtained from the two methods of planting are interesting. Ogden soybeans planted April 17, and May 8, in 40-inch rows yielded significantly more than drill plantings made at the same time. In the later plantings, however, there was little if any difference in yield from the two methods of plantings.

The greatly reduced yields of early plantings of the drilled plots were due very largely to the excessive competition from weeds in these plots. There were progressively fewer weeds in the later plantings due largely to the fact that a second crop of weeds had been killed before planting. While the weeds were controlled by cultivation in the row plantings, the earlier plantings had to be hoed.

It is of interest to note that the yields increased progressively with the date of planting. While a part of this difference may be attributed to better weed control, seasonal conditions, primarily rainfall, were unusually favorable to later plantings. Dates of planting tests in the past have shown that plantings in mid-May have consistently produced high yields of soybeans.

In another experiment the productivity of check versus row plantings of soybeans was determined. The test was planned to compare the productivity of the Ogden and Volstate varieties of soybeans, in check plantings of 2, 4, 8, and 16 plants per check hill, with 40-inch rows planted in the usual manner. Five complete replications of each method were planted on May 9. Because of unfavorable conditions for germination and subsequent growth, the number of plants per hill was less than had been planned, particularly with the check plantings of 8 and 16 plants per hill.

It should be noted from this one-year test, that there was no appreciable difference in yield of these varieties when planted in rows or check planted.

It should be pointed out that these data are the result of only one test. Had several years data been available, more reliability could be placed in the results.

—s b d—

Cooperative investigations between the Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture, the U. S. Regional Soybean Laboratory, and the Mississippi Agricultural Experiment Station.

DURKEE

(Continued from page 11)

clear and brilliant during a five-and-a-half hour immersion in cracked ice.

Small amounts of substances are sometimes present which cause a hazy appearance, so the chilled oil is sent through filter presses for clarification, after mixing with a filter "aid". This is in contrast to the production of salad oil from cottonseed oil, where from 17 percent to 35 percent of stearin must be removed by slow chilling and crystallization, including a very gentle filtration.

DEODORIZATION

As is necessary with all types of vegetable oils, any remaining objectionable odor or flavor is removed by means of superheated steam under very low pressure. In the batch process, tanks holding as much as 30,000 pounds of oil, kept at high temperatures, are used. The soybean odor is quite apparent in the water used to condense the steam coming from the equipment maintaining the vacuum.

Following the deodorization treatment, the oil is cooled under vacuum, and further clarified through filtering, which removes any minute particles still present.

Equipment modelled after distillation columns has been developed, in which the heated oil trickles through a series of plates to the bottom, while superheated steam passes through. Low pressure is essential, to aid volatilization of any undesirable flavor.

COMMERCIAL PROSPECTS

The country has received a liberal education in the adaptability and general merits of soybean oil. Rejection of prejudices dating back to the "dark days" of the Manchurian oil, and consumer acceptance of today's domestic product are a reality.

Research and application of new refining developments, such as carried on at Staley's Research and Control Laboratory, collaborating with the production division at the Decatur plant, have constantly improved the quality of soybean oil, and will continue to do so. The farmer can make a great contribution to this quality by delivering clean, sound, fully-ripened beans to the collecting elevators.

Production has soared. Construction of the new 2 million dollar Staley plant, plus a $250,000 expansion in laboratory facilities, testify to faith in the future of a growing industry. The once little-known soybean has hit its stride, and is headed toward days of ever-widening use by the American public.

Producing Soy Sprouts

By M. T. MUNN*

WHEN soybean sprouts were introduced along with other soybean products by the New York State Emergency Food Commission as a very desirable yet inexpensive and abundant source of foods rich in vitamins to supply the needed deficiencies in war time diet, there was put into operation a seed germination project of very large proportions.

It was thought by some that to get an abundance of sprouts for canning, dehydrating or freezing all that was necessary was to locate some soybeans most anywhere and with some form of sprouting jar, pan or tank the job was done. Those who have tested the germinability of seeds realize that it is not as easy as that.

Satisfactory sprouts are best obtained by inducing slow growth giving firm, crisp sprouts.

Seed which germinated less than 90 percent even though it was of a certified seed quality did not prove satisfactory. Seedstocks which gave a normal germination of 95 percent in germinator tests, gave a yield of 85 percent of useful sprouts for processing.

Sproutability tests of over 300 stocks on the open market showed less than 10 percent to be suitable for quality sprout production. The seed needs to be of the current year's crop, well matured, free of all soil and other sources of contamination and so threshed that no seed or thresher injury has occurred. Thresher injury showed in the canned product as dark lines or cracks across the cotyledons.

The field varieties were most useful, and a yellow seeded variety with a light colored or yellow hilum preferred. All of the varieties tested swelled to twice their original volume in about 12 hours, and four to six times their volume when sprouted to best edible form, or about 1 to 1½ inches in length when both bean and sprout are eaten.

One of the greatest handicaps to successful sprout production was the abundant fungal and bacterial load many of the immature, shriveled, and poorly harvested seedstocks carried. This was particularly true of soys held in storage, especially when they were harvested late and the moisture content was high when *Aspergillus* spp., were abundant. Most of these bag, bin or weather-damaged stocks produced many stunted, crooked and twisted sprouts.

When early harvested seedstocks of early maturing varieties were tested the amount of infection by bacteria and fungi was very low and with normal drenching or washing no difficulty was encountered in either the test jars or the germination-test rolls.

Chlorinated lime water sometimes recommended as a presoak to control microorganisms was not necessary if the seedstock itself was acceptable for sprout production. If used for more than one-half hour it proved to be harmful rather than beneficial especially if the seed coats ruptured while in the hypochlorite solution. Changing the soaking water frequently was of as much benefit as the hypochlorite solution.

The relation of water supply to quality sprouts seemed to operate in two respects, namely, the cool water used as a drench reduced the heat of the sprouting mass, removed the carbon dioxide and also served to carry away microorganisms and products of putrefaction.

When watering was not done frequently enough the sprouts became tough and roots tended to be formed. Watering every 4 to 6 hours was necessary and the water must run away or drain out immediately.

*Journal paper No. 619, New York State Agricultural Experiment Station, Geneva, N. Y., reprinted from Proceedings of Association of Official Seed Analysts, 35th Annual Meeting.

WASHINGTON Digest

By PORTER M. HEDGE
Washington Correspondent for The Soybean Digest

Protein Shortage Last fall's warnings of a general feed shortage this winter and spring have finally caught up with the Administration, and officials are tightening up on all feed fronts.

The protein meal distribution and set-aside order, turned aside during the reconversion "honeymoon" period last fall, is considered as but the forerunner of other feed control moves to come.

However, the protein meal set-aside is expected to continue at a relatively low rate — it was 5 percent of production for January and February. In view of the tight supplies, feed officials are anxious to avoid handling a large set-aside, want only enough to ease the shortage in areas of greatest need.

It's also expected that when the limitation on use of meal for poultry feeds reaches 10 and 15 percent below a year ago, this will release enough meal for other purposes to ease the situation.

During January, bulk of the set-aside meal went into eight states — Michigan, North Carolina, Florida, Oklahoma, Texas, New Mexico, Colorado, and Wyoming, reports Walter Berger, chief of the feed division of Production & Marketing Administration's grain branch.

Main provisions of the order (WFO 9):

1) Use of protein meal in livestock feeds, other than poultry, is limited to the quantity used during the corresponding quarter of 1945.

2) Use of meal in poultry feeds is restricted to 100 percent of the corresponding month a year ago for February, to 95 percent for March, 90 percent for April, and to 85 percent thereafter.

3) Inventories are limited to a 30-day supply, based on use or sales during the corresponding month of 1945.

4) Whole or ground soybeans in livestock and poultry feeds or fertilizer is restricted.

5) Use of edible soybean products in livestock and poultry feeds is prohibited.

Twenty feed industry men are helping to administer the order.

To feed officials the current tight feed situation is a matter of simple arithmetic — too much livestock for the feed available.

U. S. supply of feed grains is about 3½ million tons less than a year ago.

But there are 3 to 4 percent more chicks; 12 percent more fall pigs; 8 percent more turkey hens; near-record numbers of cattle on feed; and continued high dairy production.

The world shortage of bread grains prohibits diversion of U. S. wheat into feed. Much of the 1945 corn crop is of low feeding quality, and a marketing order on corn is expected before spring.

Caught in a squeeze which he hadn't calculated on when he turned grains loose to distillers last fall, Secretary of Agriculture Anderson is urging farmers to feed less grain to hogs and cattle, cull poultry flocks sharply, raise fewer chickens and turkeys.

Soya Use Abroad Don Payne, former USDA expert on vegetable protein foods, has returned from his European mission for UNRRA (United Nations Relief & Rehabilitation Administration).

Payne's official report on his mission hasn't been released, but he says European food officials expressed great interest in the possibilities of vegetable proteins. A sizeable amount of U. S.-made soya flour has been sold to Europe, he reports, but the problem is to get it delivered.

An official UNRRA report says about 30,000 tons of soya products have been purchased by foreign governments, and requirements for the first 2 months of 1946 call for another 30,000 tons.

The Chinese, who always have used soybeans for food, may also receive soya products in their relief shipments, the report says.

A Price of $2.04? The odds on price support for the 1946 soybean crop have now shifted in favor of a higher price floor than the $1.80 a bushel tentatively agreed on last fall.

The reason is that ranking officials in Production and Marketing Administration have come around to the view, held by production men all along, that $1.80 isn't enough price pull to attract the desired 9,590,000 acres asked for in the 1946 goal.

USDA is reported on good authority to be asking for an increase of $15 a ton in the price ceilings on high protein meals.

The bid for a higher price has a double-edged purpose. It would permit crushers to pay farmers about the same price for 1946 soybeans as the $2.04 a bushel price support on the 1945 crop. It also would put an effective curb on the scramble for protein meal, especially by the so-called "marginal" users.

The request is justified on grounds that it would permit continuance of the present price support without subsidy; also that protein meal prices have gone up proportionately less than grain and by-product feeds, which has led to abnormal consumption of meal during a tight feed period.

The bid for a higher meal price ceiling has been sent to John C. Collet, price stabil-

ization referee in the Office of War Mobilization and Reconversion.

It's by no means certain that Collet will grant the increase. OPA, fighting to hold the line against the pressure of an inflation tide which has hit the Capital, is putting up stiff resistance to a ceiling boost.

USDA wants an early decision one way or another. If the price increase on meal is turned down, one top official maintains, it will be necessary to subsidize the 1946 soybean price support up to the same $2.04 a bushel level to come anywhere near obtaining the goal acreage.

—sbd—

SOY FLOUR REQUIRED IN FRENCH BREAD

As a means of offsetting dietary deficiencies, millers chosen to supply large urban centers in France are now required by the Ministry of Food to add 5 grams (0.18 ounces) of soya flour to every 100 grams (3.5 ounces) of flour for a specified type of bread, reports the Office of Foreign Agricultural Relations of the U. S. Department of Agriculture.

Officials report that there are, or will be, sufficient supplies to continue addition of 5 percent soya flour for several months. A large portion of the soybeans used came from the United States. The soya flour employed was made from soya cake and is not believed to have received any special treatment.

Since liberation, French bread has not been of prewar quality. By law it has been made of 85 percent wheat, 13 points higher than prewar, but 13 points less than in the German occupation period.

While the nutritional advantages of soybeans have been long recognized by Ministry officials, they were not emphasized until last spring when diets were short in protein and the Ministry's requested meat imports were not forthcoming. Soybeans, which were available for import, were also recognized as being rich in calcium and other nutrients badly needed in France.

Soya products have not been popular in France, partly because they have not had widespread use and partly because the Germans "overpromoted" them during the occupation. Consequently, serious difficulties in getting consumer acceptance of these products were contemplated, but, contrary to expectations, the reaction to the soya addition has apparently been favorable.

Production of soybeans in France has been very small and only through importation or a large increase in 1946 plantings can supplies be made available for continued supplementation of bread flour.

During the German occupation, efforts were made to induce farmers to increase soybean production. Further encouragement was given by the French in a decree of July 3, 1945, permitting producers to satisfy part or all of their impositions for oilseeds by delivering soybeans. However, it appears that soybean production in France will not increase greatly in the near future since yields are small in comparison with those in other countries.

—sbd—

CANADA FIXES OILSEED 1946 ACREAGE GOALS

In view of domestic and foreign requirements of fats and oils, the Dominion Provincial Conference has recommended an increase in Canadian flaxseed and sunflower seed acreages of 18 and 97 percent, respectively, in 1946 and asked that soybean and rapeseed plantings be maintained at the 1945 level.

Canadian supplies of fats and oils are at such a low point that linseed oil is now being used in shortening. This is causing a further strain on the paint industry, which is operating at only 70 percent of capacity in spite of the heavy demand intensified by the postwar building program.

Based on estimated requirements, the 1946 figure for soybeans is 43,650 acres, the equivalent of this year's harvested acreage. Rapeseed cultivation became popular during the war, and acreage increased from 4,000 acres in 1943 to 20,400 in 1945. No expansion is planned for next year, although producers are asked to equal this season's plantings.

--- MARKET STREET ---

We invite the readers of THE SOYBEAN DIGEST to use "MARKET STREET" for their classified advertising. If you have processing machinery, laboratory equipment, soybean seed, or other items of interest to the industry, advertise them here. Rate: 5c per word per issue. Minimum insertion $1.00.

FOR SALE — Certified Lincoln and Illini soybean seed, $3.00 per bu. in bags. Certified Tama oats $1.25 per bu. Special price on large lots. J. Harold Canterbury, Cantrall, Ill.

WANTED — Anderson Super Duo expeller with fourteen inch conditioner or thirty-six inch cooker. IM, Soybean Digest, Hudson, Iowa.

CERTIFIED LINCOLN soybean seed, also Earlyana for sale. Special price in truck or carload lots. Bert L. Benskin, Laurel, Iowa.

FOR SALE — Certified Lincoln soybean seed. Foundation stock. Varietal mixture .04%. Order early. Edward F. Lehman, Remington, Ind.

FOR SALE — Ohio Certified Lincoln Soybean Seed. Certified Hybrid Seed Corn. Always dependable quality. Herbert Ruff, Amanda, Ohio.

WANTED — Good used California pellet mill. Write H. D. Watson, 761 Chamber of Commerce Bldg., Minneapolis, Minn.

FOR SALE — Certified Lincoln soybean seed from foundation stock. We have modern cleaning equipment. Special price on large orders. Biddle Farms, Remington, Ind.

WANTED — To hear from owner of farm for sale for spring delivery. Wm. Holly, Baldwin, Wis.

CERTIFIED LINCOLN SOYBEAN SEED—97% germination, 99.9% varietal purity. In recleaning, all seeds which would pass through a 3/16" x 3/4" lower screen were graded out, giving a very uniform size of product with exceptionally good appearance and high test quality. Wholesale prices to purchasers of carload or truck load quantities of 500 bushels or over. Retail prices vary with size of order. Write for quotations to the producer, Lynn H. Clarkson, Cerro Gordo, Piatt County, Ill.

Seed Directory

A charge of $2.00 will be made to subscribers for listing in the March and April issues. Quantity for sale and variety are included.

ILLINOIS

Arcola — Geo. L. Pfeifer, 5,000 bu. certified Lincoln.

Atwood — John H. Livengood, Sr., 300 bu. certified Dunfield; 700 bu. Lincoln, certification can be completed after cleaning.

Bowen — Roy A. Morton & Sons, Lincoln, Illini, and Earlyana, all certified.

Cambridge — Hadley Farms, Rt. 2, 1,300 bu. certified Lincoln.

Cantrall — J. Harold Canterbury, 2,000 bu. certified Lincoln; 600 bu. certified Illini.

Champaign — Seeber Brothers, Rt. 3, 2,000 bu. certified Chief; 500 bu. certified Lincoln.

DeKalb — DeKalb Agricultural Association, Inc., 310 N. Fifth St., 4,500 bu. certified Earlyana; 2,400 bu. certified Lincoln.

Ladd — Martin Manning, 1,500 bu. certified Lincoln.

Laura — Hubert L. Oakes, 1,000 bu. certified Lincoln, purity 99.9%, germination 97%; 600 bu. uncertified Lincoln.

Lomax — John Peasley, 2,500 bu. certified Lincoln.

Mattoon — Turner Seed & Supply, IC and Champaign St., 500 bu. certified Richland; 2,000 bu. uncertified Richland; 5,000 bu. certified Lincoln; 20,000 bu. uncertified Lincoln, 1,000 bu. uncertified Patoka; 4,000 bu. uncertified Mt. Carmel; 5,000 bu. uncertified Chief, Illini, Dunfield.

Nokomis — E. E. Rademacher, Box 184, 1,500 bu. certified Lincoln; 350 bu. uncertified Illinois (brown hay).

Nokomis — Ike Smith, Rt. 2, 3,000 bu. certified Lincoln.

New Berlin — Evan F. Taylor, Rt. 1, 2,000 bu. certified Lincoln.

Normal — National Hybrid Corn Co. (of Illinois), 102 E. Phoenix Ave., 2,500 bu. certified Lincoln.

Onarga — Onarga Farms, S. B. Cultra, 1,000-3,000 bu. certified Lincoln.

Ottawa — Willis Thorsen, Rt. 2, 2,100 bushels certified Lincoln, varietal purity 99.9, germination 97%.

Peoria — W. O. Pendarvis, 1007 Central Nat'l Bank Bldg., 600 bu. certified Lincoln.

Peoria — W. G. Kelly, Kelly Seed Co., 116-18 S. Wash. St., 11,000 bu. certified Lincoln; 800 bu. uncertified Lincoln; 1,500 bu. uncertified Illini; 1,500 bu. uncertified Dunfield; 1,200 bu. uncertified Chief; 2,800 bu. uncertified Richland; 800 bu. uncertified Mt. Carmel; 6,500 bu. uncertified Patoka.

Pesotum — D. W. Burnett, 3,500 bu. certified Lincoln, no germination test made yet.

Rantoul — Harold Zehr, Rt. 1, 3,000 bu. certified Illini; 500 bu. certified Lincoln.

Roseville — Pratt Seed Farms, Dale Watson, Mgr., 5,000 bu. certified Lincoln; 1,500 bu. uncertified Lincoln.

Royal — Henry Osterbur, Jr., 1,400-1,500 bu. certified Lincoln, germination 96%, purity 99.5%.

Savoy — R. J. Hixson, P.O. Box 26, 1,500 bu. Lincoln grown from own certified seed, will furnish certification if wanted.

Seymour — Paul V. Klein, Rt. 1, 3,000 bu. certified Lincoln.

Sidney — S. A. Buddemeier, Rt. 1, 1,000 bu. certified Lincoln.

Springfield — R. C. Graham, 308 Ferguson Bldg., 1,500 bu. certified Lincoln, in 2-bu. bags.

Stonington — James Meridith, 1,500 bu. certified Lincoln.

Sullivan — Landers Seed Co., 1,500 bu. certified Lincoln; 1,500 bu. uncertified Lincoln; could also supply several thousand bu. uncertified Lincoln from certified stock in hands of farmers in community.

Taylorville — Debrun Bros., 400 N. Main St., 1,400 bu. certified Lincoln.

Tolono — W. E. Riegel, 1,000 bu. Lincoln grown from 1945 certified seed.

Tuscola — A. N. Cabalek, 800 bu. certified Illini; 1,400 bu. certified Tama; 300 bu. certified Lincoln.

Utica — R. W. Jones, Rt. 1, 1,500 bu. certified Lincoln.

Witt — Witt Elevator, 3,000 bu. certified Lincoln; 3,000 bu. uncertified Illini; 3,000 bu. uncertified Chief; 2,000 bu. uncertified Dunfield; 1,500 bu. uncertified Virginia.

INDIANA

Amboy — Glen D. Pence & Son, Rt. 1, 2,000 bu. certified Lincoln.

Berne — Earl Sipe, Rt. 2, 200 bu. certified Lincoln.

Bluffton — Herman L. Miller, Rt. 1, 1,400 bu. certified Lincoln, purity 99.9%; 600 bu. certified Richland, purity 99.9%.

Brookville — George A. Prifogle, 1,000 bu. certified Lincoln, foundation seed stock, germination 95%.

Camden — Taylor Fouts, Soyland, St. RDS. No. 29 and 218, 1,500 bu. certified Lincoln; 1,500 bu. certified Tama oats.

Ft. Wayne — O. L. Bryant & Son, Rt. 4, 4,000 bu. certified Lincoln; 800 bu. certified Earlyana.

Greenfield — Lewis C. Hardin, Rt. 1, 2,000 bu. certified Lincoln.

Huntington — D. E. Whinery, Rt. 6, 800 bu. Indiana certified Lincoln.

Huntington — Allan Anson, Rt. 2, 1,500 bu. certified Lincoln.

Kouts — Walter Heiniger, 1,200 bu. certified Lincoln.

Lafayette — Agricultural Alumni Seed Improvement Association, Inc., Rt. 1, 2,000 bu. certified Lincoln, foundation seed.

McCordsville — Maurice Woodward, 1,500 bu. certified Lincoln.

Muncie — O. C. Russell & Sons, Rt. 1, 1,000 bu. certified Lincoln, foundation seed; 500 bu. certified Kingwa foundation seed.

Princeton — Princeton Farms, 1,000 bu. certified Lincoln; 2,000 bu. certified Gibson; 2,000 bu. certified Patoka.

Remington — Edward F. Lehman, certified Lincoln foundation stock.

Remington — Chester B. Biddle, 10,000 bu. certified Lincoln.

Remington — Glenn L. Kinsell, 5,000 bu. certified Lincoln; 3,000 bu. certified Earlyana; 500 bu. certified Richland.

Valparaiso — L. K. Wyckoff, Rt. 3, 2,500 bu. certified Lincoln; 1,200 bu. certified Lincoln foundation; 2,500 bu. certified Earlyana; 1,000 bu. certified Earlyana foundation; 500 bu. certified Richland.

Walton — Lloyd W. Toney, Rt. 2, 500 bu. certified Lincoln; 200 bu. certified Earlyana.

Waveland — Harry N. Moser, 1,000 bu. certified Lincoln; 400 bu. certified Earlyana.

Windfall — Mitchell Farms, 2,000 bu. certified Earlyana; 4,000 bu. certified Lincoln.

IOWA

Batavia — Maurice Laughlin, 500 bu. certified Lincoln.

Batavia — Glenn Willhoit, 500 bu. certified Lincoln 95% germination.

Boone — Lloyd F. Nelson, Rt. 2, 300 bu. certified Lincoln.

Boone — Roscoe Marsden, Rt. 1, 1,000 bu. certified Lincoln.

Castana — Fred W. Hawthorn, 2,000 bu. certified Lincoln.

Center Point — Elmer F. Burr, 2,000 bu. certified Lincoln.

Crawfordsville — Richard Stephens, 600 bu. certified Lincoln.

Des Moines — A. B. Kline, 3122 49th St., 1,200 bu. certified Lincoln.

Dysart — Henry Hilmer, 3,000 bu. certified Lincoln.

Estherville — A. B. Rosenberger, 250 bu. certified Earlyana; 200 bu. Richland from certified seed; 150 bu. uncertified Habaro.

Harlan — Kilpatrick Hybrid Corn Co., Rt. 2, 285 bu. certified Lincoln.

Hudson — Strayer Seed Farms, 1,000 bu. certified Lincoln; 700 bu. uncertified Bansei; 400 bu. uncertified Giant Green; 200 bu. uncertified Sac.

Independence — T. J. Searcy, 500 bu. certified Lincoln.

Laurel — Bert L. Benskin, certified Lincoln, Earlyana.

Marcus — John Sand, 400 bu. certified Lincoln; 3,000 bu. certified Earlyana; 1,000 bu. certified Richland.

Marshalltown — Clarence R. Zink, Rt. 5, 700 bu. certified Lincoln.

Marshalltown — Kenneth R. Lynk, Route 1, 4,500 bu. certified Lincoln; 350 bu. Richland from certified seed.

New Sharon — Eddie De Jong, Rt. 1, 200 bu. certified Lincoln.

Packwood — Carl Edmund, 2,000 bu. certified Lincoln.

Pilot Mound — W. W. Lundberg, 200 bu. certified Lincoln.

Richland — Alva Leo Baker, Rt. 1, 900 bu. certified Lincoln.

Templeton — Irlbeck Hybrid Seed Farm, 400 bu. certified Lincoln.

Tipton — Edwin Butterbrodt, 1,500 bu. certified Lincoln; recleaned and bagged.

Traer — Roy Kern, Lincoln, Earlyana and Richland, certified or uncertified; Tama, Boone and Vickland oats.

Tripoli — R. O. Wikner, Towneview Farm, certified Earlyana, germination 97%; Tama oats grown from certified seed.

Union — Merle Stanfield, 2,000 bu. certified Lincoln.

Wall Lake — A. J. Graham, 1,500 bu. certified Lincoln.

Williams — Lawrence J. Reike, 2,500 bu. certified Lincoln.

Winfield — Harry Rossiter, 500 bu. certified Lincoln, germination 96%

MINNESOTA

Hector — Kenneth C. Butler, 200 bu. certified Wisconsin Mandarin; 100 bu. certified Ottawa Mandarin.

Cannon Falls — Geo. F. Schwartaw, 500 bu. registered Habaro.

Montevideo — John W. Evans, Rt. 1, 400 bu. Habaro; 200 bu. Pridesoy; 400 bu. certified Ottawa Mandarin.

OHIO

Bucyrus — Earl G. Lowmiller, Rt. 3, certified Earlyana; uncertified Lincoln; certified Vicland oats.

Lima — The Ackerman Co., 215 W. First St., 600 bu. certified Lincoln; 500 bu. uncertified Lincoln; 1,000 bu. uncertified Kingwa.

Maumee — W. N. Woods & Son, Monclova Road, 250 bu. Earlyana; 600 bu. Lincoln.

Maumee — H. P. Schaller & Sons, Rt. 1, 1,500 bu. certified Lincoln; 600 bu. uncertified Lincoln.

Van Wert — Marsh Foundation Farms, Box 150, 5,000 bu. Ohio certified Lincoln; 5,000 bu. uncertified Lincoln.

In The MARKETS

● SOYBEAN STOCKS. Stocks of soybeans on farms January 1, amounted to 43,363,000 bushels, equivalent to about 23 percent of the 1945 production. This is a slight increase over the 42 million bushels on farms January 1, 1945, which represented 22 percent of the 1944 production. Farm stocks on January 1, 1944 were estimated at 57 million bushels. On January 1, 1943, the first year for which farm stocks data are available, 88 million bushels were still on farms. However, the latter figure included considerable 1942 production that was unharvested by January 1, 1943, due to the very unfavorable fall harvesting season.

In much of the main soybean area, harvesting of the 1945 crop was delayed somewhat by excessive rains in late September and early October. With an improvement in weather conditions, harvesting progressed at a satisfactory rate but subsequent rains and snows delayed completion of harvest in some localities. Only a small percentage of the acreage still remained unharvested by January 1, mostly in parts of Illinois and Ohio. The crop moved to market after harvest as rapidly as transportation and storage facilities permitted. Demand for soybeans was strong. With price controls in effect, growers in commercial areas tended to sell beans instead of holding them for higher prices.

Farm disappearance between October 1, 1945 and January 1, 1946 was about 151 million bushels from a total supply of 194½ million bushels. The disappearance from October 1, 1944 to January 1, 1945 amounted to 153 million bushels from a total supply of 195 million bushels. Farm disappearance for the October-December quarter in both years was much larger than for the same period for either the 1942 or 1943 crops.

Stocks of Soybeans on Farms on January 1

(1,000 Bu.)

State	1943	1944	1945	1946
New York	282	270	163	48
New Jersey	230	252	113	120
Pennsylvania	345	372	246	211
Ohio	11,711	9,064	6,103	5,620
Indiana	12,135	7,527	6,648	6,981
Illinois	26,560	16,905	11,659	13,338
Michigan	1,522	1,357	686	722
Wisconsin	538	717	485	261
Minnesota	2,378	1,561	1,042	1,365
Iowa	19,853	11,554	8,131	7,318
Missouri	3,179	2,000	2,015	2,088
North Dakota	40	43	24	30
South Dakota	195	101	49	90
Nebraska	420	160	73	105
Kansas	1,145	695	530	521
Delaware	495	263	223	240
Maryland	543	237	214	269
Virginia	927	486	416	626
West Virginia	22	18	9	13
North Carolina	2,021	1,550	926	1,269
South Carolina	52	70	54	42
Georgia	68	42	42	36
Kentucky	330	292	312	256
Tennessee	378	342	386	299
Alabama	160	172	206	90
Mississippi	1,222	579	437	433
Arkansas	814	406	614	769
Louisiana	516	227	157	172
Oklahoma	62	35	34	31
Texas	72	36	1	—
U. S.	88,215	57,333	41,998	43,363

● SOYBEAN INSPECTIONS. Receipts of soybeans inspected in December decreased seasonally to 3,464 cars compared with 24,782 cars in November and 29,489 cars in October, and 3,898 cars in December 1944, according to inspectors' reports to the Grain Branch of the Production and Marketing Administration. December inspections brought the total for the first three months of the season to 57,735 cars compared with 53,172 cars for the same months in 1944.

The quality of soybeans inspected in December was considerably below that for the preceding month, only 77 percent grading No. 2 or better compared with 92 percent in November and 93 percent in October, and 84 percent in December 1944.

Inspections of soybeans in December included the equivalent of 200 cars inspected as cargo lots and truck receipts equivalent to about 54 cars.

● ANALYSIS OF SOYBEAN PRODUCTS. A summary of soybean samples analyzed by Woodson-Tenent Laboratories during December.

Average Chemical Analyses of Soybeans Grown in Tennessee, Arkansas, Mississippi, Missouri.

	Oil (Oil calculated to 14% moisture) %	Oil Yields per bushel* lbs.
Average	17.7	8.1
Month's highest	19.9	9.5
Month's lowest	14.9	6.4

Average Chemical Analyses of Soybeans Grown in Minnesota, Wisconsin, Michigan, Ohio, Indiana, Illinois, Iowa Kentucky, Virginia, Kansas, Nebraska

Average	17.3	7.9
Month's highest	19.4	9.2
Month's lowest	14.9	6.4

Soybean Oil Meal — Average of All Soybean Meal Analyses

	Moisture %	Oil %	Protein %	Standard
Average	12.66	4.57	43.14	55
Month's best	9.30	3.88	46.75	43

Analyses of Soybean Oil

	F.F.A. %	Gardner Break %	Moisture & Volatile %
Average	0.6	0.83	0.19
Month's best	0.5	0.46	0.06

*Calculated 12.50% moisture and 5% oil left in meal.

● SOYBEAN STOCKS. Production and Marketing Administration's commercial grain stock report.

U. S. Soybeans in Store and Afloat at Domestic Markets (1,000 Bu.)

	Jan. 8	Jan. 15	Jan. 22	Jan. 29
Atlantic Coast	117	117	117	117
Gulf Coast	142	143	71	3
Northwestern and Upper Lake	1,837	2,077	2,077	2,074
Lower Lake	11,032	10,982	10,700	10,097
East Central	6,614	6,377	5,865	5,608
West Central, Southwestern & Western	3,855	3,604	3,464	3,368
Pacific Coast				
Total current week	23,597	23,210	22,294	21,267
Total year ago	23,993	23,391	22,902	22,060

U. S. Bonded Soybeans in Store & Afloat at Canadian Markets

Total current week	74		6	
Total year ago	91	86	86	82

Total North American Commercial Soybean Stocks

Current week	23,671		22,300	21,267
Year ago	24,084	23,477	22,988	22,142

● STANDARD SHORTENING SHIPMENTS. By members of Institute of Shortening Mfgrs., in pounds.

December 29	3,920,739
January 5	4,577,762
January 12	8,761,968
January 19	6,576,266
January 26	7,141,997
February 2	6,367,929

● MARGARINE AND BUTTER. November, 1945, margarine output was 46.8 million pounds, whereas creamery butter production that month was 72 million pounds, presenting a closer volume relationship than usual, reports U. S. Department of Agriculture. Margarine made in November was down somewhat under a year ago, but not to the extent that butter fell. Butter continued to decline in December to a point 30 percent lower than a year ago.

● FOODSTUFFS TO PHILIPPINES. Foodstuffs allocated to the Philippines during the first quarter of 1946 include: vegetable shortening, 25,000 lbs.; margarine, 200,000 lbs.; soybean oil, 200,000 lbs.; and vegetable stearin, 600,000 lbs.

Government Orders

● OIL IN SYNTHETIC RESINS. The U. S. Department of Agriculture has clarified the requirements of Amendment 9 to War Food Order 29, issued December 21, 1945, under which manufacturers are limited in their use of soybean oil in synthetic resins.

Formerly, soybean oil could be used in the production of synthetic resins without specific restriction. The amendment to WFO 29 limits the amount that may be used each month. It also requires a user to certify to his supplier that his use in any month shall not exceed one-sixth of the quantity that he used in synthetic resins during the first six months of 1945. Tank bottoms or foots of soybean oil, or acids made from tank bottoms or foots, are not affected by this restriction.

Only acids made from whole oil, other than tank bottoms or foots, come under the restriction. Users, in certifying to their suppliers, were advised to convert the quantity of restricted acids used into comparable quantities of whole oil and include that quantity in their use for purposes of compliance.

● FEBRUARY SET-ASIDE. The U. S. Department of Agriculture has announced that processors will be required to set-aside 5 percent of their February production of soybean, cottonseed, linseed and peanut oil meal.

This is the same as the quantity ordered set aside beginning January 21 (when the set-aside order was re-instated) through January 31.

Processors are being instructed to ship the set-aside meal for use in designated states which are short of their equitable share of supplies of protein meal. Shipments to date have been ordered to Wyoming, Colorado, New Mexico, Oklahoma, Texas, Florida, North Carolina, Michigan and Kentucky.

The oil meal is being sold by the processors through regular trade channels in the designated states.

EDITORIAL

(Continued from page 5)

and traded. They have a right to purchase their own needs of meal in return, whether it be in the form of straight meal or mixed feed. Sometimes it appears that the industry has forgotten this. Soybean growers remembered last fall—there are still soybeans on farms, to be traded for meal when that commodity is needed by the holder of the beans.

In a national emergency all protein supplies should be stretched just as far as possible, made available to feeders in the form in which the greatest tonnage of human food can be produced. That has been done during the recent years. The great emergency is now over in fact, even though not officially declared. It is time for recognition of the demands of the producer of soybeans by the handlers of the crop. Lack of recognition will encourage further processing facilities, built to insure supplies of what the feeder wants rather than what the mixer wants him to have.

The new protein order should materially assist in correcting the present critical protein supply situation. It should be unselfishly supported and enforced. It will not make more oil meal—but it will make it more available. And as an industry let's look at this situation from a long range viewpoint!